

- return type (返回类型), 184
 - trailing (尾置), 206
 - type alias (类型别名), 206
 - decltype, 206
 - sizeof, 139
 - subscript range (下标范围), 104
 - subscript type (下标类型), 103
 - understanding complicated declarations (理解复杂声明), 102
 - array
 - see also* container (参见“容器”)
 - see also* sequential container (参见“顺序容器”)
 - [](subscript) (下标), 310
 - = (assignment) (赋值), 302
 - assign, 302
 - copy initialization (拷贝初始化), 301
 - default initialization (默认初始化), 301
 - definition (定义), 301
 - header (头文件), 294
 - initialization (初始化), 299–301
 - list initialization (列表初始化), 301
 - overview (概览), 293
 - random-access iterator (随机访问迭代器), 367
 - swap, 303
 - assert preprocessor macro (assert预处理宏), 215, 225
 - assign
 - array, 302
 - invalidates iterator (令迭代器失效), 302
 - sequential container (顺序容器), 302
 - string, 322
 - assignment, vs. initialization (赋值对比初始化), 39, 258
 - assignment operators (赋值运算符), 129–131
 - associative array (关联数组), *see* map (参见map)
 - associative container (关联容器), 374, 397
 - and library algorithms (和标准库算法), 383
 - initialization (初始化), 377
 - key_type requirements (key_type需求), 378, 396
 - members (成员)
 - begin, 382
 - count, 388, 389
 - emplace, 384
 - end, 382
 - equal_range, 390
 - erase, 386
 - find, 388, 389
 - insert, 384
 - key_type, 381, 397
 - mapped_type, 381, 397
 - value_type, 381, 398
 - override default comparison (覆盖默认比较), 379
 - override default hash (覆盖默认哈希), 396
 - overview (概览), 376
 - associativity (结合律), 120, 121–123, 149
 - = (assignment) (赋值), 129
 - ?: (conditional operator) (条件运算符), 134
 - dot and dereference (点运算符和解引用运算符), 134
 - increment and dereference (递增和递减运算符), 132
 - IO operator (输入输出运算符), 138
 - overloaded operator (重载运算符), 491
 - at
 - deque, 310
 - map, 387
 - string, 310
 - unordered_map, 387
 - vector, 310
 - ate (file mode) (文件模式), 286
 - auto, 61, 69
 - cbegin, 97, 339
 - cend, 97, 339
 - for type abbreviation (为类型缩写), 79, 115
 - of array (数组的), 105
 - of reference (引用的), 61
 - pointer to function (函数指针), 222
 - with new (与新), 407
 - auto_ptr deprecated (auto_ptr已弃用), 419
 - automatic object (自动对象), 185, 225
 - see also* local variable (参见“局部变量”)
 - see also* parameter (参见“形参”)
 - and destructor (和析构函数), 445
 - avg_price, Sales_data, 232
- ## B
- back
 - queue, 330
 - sequential container (顺序容器), 309
 - StrBlob, 406
 - back_inserter, 341, 358, 371
 - requires push_back (需要push_back), 341, 358
 - bad, 280
 - bad_alloc, 176, 408
 - bad_cast, 176, 731
 - bad_typeid, 733
 - badbit, 279
 - base, reverse iterator (反向迭代器), 364
 - base class (基类), 526, 575
 - see also* virtual function (参见“虚函数”)
 - abstract (抽象), 541, 575
 - base-to-derived conversion, not automatic (派生类

- 向基类的转换, 非自动), 534
- can be a derived class (可以作为派生类), 533
- definition (定义), 527
- derived-to-base conversion (派生类向基类的转换), 530
 - accessibility (可访问性), 544
 - key concepts (关键概念), 537
 - multiple inheritance (多重继承), 712
- final, 533
- friendship not inherited (友元关系不能继承), 545
- initialized or assigned from derived (用派生类初始化或赋值), 535
- member hidden by derived (派生类隐藏的成员), 549
- member new and delete (作为成员的新和delete), 727
- multiple, *see* multiple inheritance (多重, 参见“多重继承”)
- must be complete type (必须是完全类型), 533
- protected member (受保护的成员), 542
- scope (作用域), 547
 - inheritance (继承), 547–551
 - multiple inheritance (多重继承), 715
 - virtual function (虚函数), 550
- static members (静态成员), 532
- user of (……的用户), 544
- virtual, *see* virtual base class (虚, 参见“虚基类”)
- virtual destructor (虚析构函数), 552
- Basket, 559
 - add_item, 561
 - total, 560
- Bear, 710
 - virtual base class (虚基类), 718
- before_begin, forward_list, 313
- begin
 - associative container (关联容器), 382
 - container (容器), 95, 117, 298, 332
 - function (函数), 106, 117
 - not with dynamic array (不能用于动态数组), 424
 - multidimensional array (多维数组), 115
 - StrBlob, 422
 - StrVec, 465
- bernoulli_distribution, 665
- best match (最佳匹配), 209, 225
 - see also* function matching (参见“函数匹配”)
- bidirectional iterator (双向迭代器), 366, 371
- biggies program (biggies程序), 348
- binary (file mode) (文件模式), 286
- binary operators (二元运算符), 120, 149
 - overloaded operator (重载运算符), 490
- binary predicate (二元谓词), 344, 371
- binary_function deprecated (binary_function 已弃用), 513
- binary_search, 773
- BinaryQuery, 564
 - abstract base class (抽象基类), 570
- bind, 354, 371
 - check_size, 355
 - generates callable object (生成可调对象), 354
 - from pointer to member (从成员指针), 746
 - placeholders, 355
 - reference parameter (引用形参), 356
- bind1st deprecated (bind1st 已弃用), 357
- bind2nd deprecated (bind2nd 已弃用), 357
- binops desk calculator (binops桌面计算器), 512
- bit-field (位域), 756, 762
 - access to (访问), 756
 - constant expression (常量表达式), 756
- bitset, 641, 641–645, 680
 - [](subscript) (下标), 644
 - <<(output operator) (输出运算符), 644
 - any, 643
 - count, 644
 - flip, 644
 - grading program (成绩程序), 644
 - header (头文件), 640
 - initialization (初始化), 641–642
 - from string (从string), 642
 - from unsigned (从unsigned), 641
 - none, 643
 - reset, 644
 - set, 644
 - test, 644
 - to_ulong, 644
- bitwise, bitset, operators (位, bitset, 运算符), 643
- bitwise operators (位运算符), 135–138
 - += (compound assignment) (复合赋值), 138
 - compound assignment (e.g., +=) (复合赋值, 如+=), 131
 - grading program (成绩程序), 137
 - operand requirements (运算对象需求), 136
- Blob
 - class template (类模板), 583
 - constructor (构造函数), 586
 - initializer_list, 587
 - iterator parameters (迭代器形参), 596
 - instantiation (实例化), 584
 - member functions (成员函数), 585–587
- block (块), 2, 11, 23, 155, 178
 - function (函数), 184
 - scope (作用域), 44, 70, 155
 - try, 173, 174, 179, 724
- block (/ * */, comment (块注释), 8, 23

book from author program (书籍作者程序), 389–391
 bookstore program (书店程序)
 Sales_data, 229
 using algorithms (使用算法), 362
 Sales_item, 21
 bool, **30**
 conversion (类型转换), 32
 literal (字面值常量), 37
 in condition (在条件中), 128
 boolalpha, manipulator (操纵符), 667
 brace, curly (花括号), **2**, 23
 braced list, *see* list initialization (花括号列表, 见列表初始化)
 break statement (break语句), **170**, 178
 in switch (在switch中), 160–162
 bucket management, unordered container (桶管理, 无序容器), 394
 buffer (缓冲区), **6**, 23
 flushing (刷新), 281
 buffer overflow (缓冲溢出), **94**, 104, 117
 array parameter (数组形参), 193
 C-style string (C风格字符串), 109
 buildMap program (buildMap程序), 393
 built-in type (内置类型), **2**, 23, 30–32
 default initialization (默认初始化), 40
 Bulk_quote
 class definition (类定义), 530
 constructor (构造函数), 531, 541
 derived from Disc_quote (从Disc_quote派生), 541
 design (设计), 526
 synthesized copy control (合成拷贝控制), 553
 byte (字节), **31**, 69

C

.C file (.C文件), 3
 .cc file (.cc文件), 3
 .cppfile (.cpp文件), 3
 .cp file (.cp文件), 3
 C library header (C标准库头文件), 82
 C-style cast (C风格类型转换), 146
 C-style string (C风格字符串), 102, **109**, 109–110, 117
 buffer overflow (缓冲溢出), 110
 initialization (初始化), 109
 parameter (形参), 194
 string, 111
 c_str, 111
 call by reference (传引用调用), 187, 189, 225
 call by value (传值调用), **187**, 225
 uses copy constructor (使用拷贝构造函数), 441
 uses move constructor (使用移动构造函数), 476

call signature (调用形式), **511**, 523
 callable object (可调用对象), **346**, 371, 506–507
 absInt, 506
 bind, 354
 call signature (调用形式), 511
 function and function pointers (函数和函数指针), 346
 function objects (函数对象), 507
 pointer to member (成员指针)
 and bind (和bind), 746
 and function (和function), 745
 and mem_fn (和mem_fn), 746
 not callable (不可调用), 745
 PrintString, 506
 ShorterString, 508
 SizeComp, 508
 with function (与function), 511–514
 with algorithms (与算法), 348
 candidate function (候选函数), **217**, 225
 see also function matching (参见“函数匹配”)
 function template (函数模板), 615
 namespace (命名空间), 708
 overloaded operator (重载运算符), 521
 capacity
 string, 318
 StrVec, 465
 vector, 318
 capture list, *see* lambda expression (捕获列表, 参见“lambda表达式”)
 case label (case标签), **161**, 161–163, 178
 default, **162**
 constant expression (常量表达式), 161
 case sensitive, string (大小写敏感, string), 325
 cassert header (cassert头文件), 215
 cast, *see also* named cast (强制类型转换, 参见“命名的强制类型转换”), 149
 checked, *see* dynamic_cast (检查, 参见dynamic_cast)
 old-style (旧式的), 146
 to rvalue reference (右值引用的), 612
 catch, **173**, 174, 178, **687**, 722
 catch(...), **688**, 722
 exception declaration (异常声明), 174, 179, 687, 722
 exception object (异常对象), 687
 matching (匹配), 687
 ordering of (……的顺序), 687
 runtime_error, 174
 catch all (catch(...)) (捕获全部), 688, 722
 caution (提示)
 ambiguous conversion operator (二义性转换运算符), 515

- conversions to unsigned (转换为unsigned), 35
- dynamic memory pitfalls (动态内存使用误区), 410
- exception safety (异常安全性), 175
- IO buffers (输入输出缓冲), 282
- overflow (溢出), 125
- overloaded operator misuse (误用重载运算符), 492
- overloaded operators and conversion operators (重载运算符与类型转换运算符), 519
- smart pointer, pitfalls (智能指针, 误区), 417
- uninitialized variables (未初始化的变量), 41
- using directives cause pollution (using指示造成程序污染), 704
- cbegin
 - auto, 97, 339
 - decltype, 97, 339
 - container (容器), 98, 298, 299, 332
- cctype
 - functions (函数), 82–84
 - header (头文件), 82
- cend
 - auto, 97, 339
 - decltype, 97, 339
 - container (容器), 98, 298, 299, 332
- cerr, 5, 23
- chained input (链式输入), 7
- chained output (链式输出), 6
- char, 30
 - signed, 32
 - unsigned, 32
 - array initialization (数组初始化), 102
 - literal (字面值常量), 36
 - representation (表示), 32
- char16_t, 30
- char32_t, 30
- character (字符)
 - newline (\n) (换行符), 36
 - nonprintable (不可打印的), 36, 70
 - null (\0) (空), 36
 - tab (\t) (制表符), 36
- character string literal, *see* string literal (字符型字符串字面值常量, 参见“字符串字面值常量”)
- check
 - StrBlob, 406
 - StrBlobPtr, 421
- check_size, 355
 - bind, 354
- checked cast, *see* dynamic_cast (经检查的强制类型转换, 见dynamic_cast)
- children's story program (孩子的故事程序), 343–349
- chk_n_alloc, StrVec, 465
- cin, 5, 23
 - tied to cout (绑定到cout), 282
- cl, 4
- class (类), 17, 23, 64, 273
 - see also* constructor (参见“构造函数”)
 - see also* destructor (参见“析构函数”)
 - see also* member function (参见“成员函数”)
 - see also* static member (参见“静态成员”)
 - access specifier (访问说明符), 240
 - default (默认), 240
 - private, 240, 274
 - public, 240, 274
 - aggregate (聚合), 266, 273
 - assignment operator (赋值运算符)
 - see* copy assignment (参见“拷贝赋值”)
 - see* move assignment (参见“移动赋值”)
 - base, *see* base class (基类), 575
 - data member (数据成员), 65, 69
 - const vs. mutable (const对比mutable), 245
 - const, initialization (const, 初始化), 259
 - in-class initializer (类内初始值), 246
 - initialization (初始化), 236, 245
 - must be complete type (必须是完全类型), 250
 - mutable, 245, 274
 - order of destruction (析构顺序), 445
 - order of initialization (初始化顺序), 259
 - pointer, not deleted (指针, 非删除), 446
 - reference, initialization (引用, 初始化), 259
 - sizeof, 139
 - declaration (声明), 249, 273
 - default inheritance specifier (默认继承说明符), 546
 - definition (定义), 64, 230–239
 - ends with semicolon (以分号结束), 65
 - derived, *see* derived class (派生, 参见“派生类”), 575
 - exception, 173, 179
 - final specifier (final说明符), 533
 - forward declaration (前向声明), 250, 274
 - friend (友元), 241, 251
 - class (类), 251
 - function (函数), 241
 - member function (成员函数), 251
 - overloaded function (重载函数), 252
 - scope (作用域), 242, 252
 - template class or function (模板类或函数), 588
 - implementation (实现), 228
 - interface (接口), 228
 - literal (字面值常量), 267
 - local, *see* local class (局部, 参见“局部类”)

- member (成员), 65, 69
- member access (成员访问), 253
- member new and delete (作为成员的新和delete), 728
- member: *constant expression*, *see* bitfield (成员: 常量表达式, 参见“位域”)
- multiple base classes, *see* multiple inheritance (多重基类, 参见“多重继承”)
- name lookup (名字查找), 254
- nested, *see* nested class (嵌套, 参见“嵌套类”)
- pointer to member, *see* pointer to member (成员指针)
- preventing copies (阻止拷贝), 449
- scope (作用域), 65, 253, 253–257, 273
- synthesized, copy control (合成, 拷贝控制), 239, 440, 444, 446, 475
- template member, *see* member template (模板成员, 参见“成员模板”)
- type member (类型成员), 243
 - :: (scope operator) (作用域运算符), 253
 - user of (……的用户), 228
 - valuelike (类值), 453
 - without move constructor (不含移动构造函数), 477
- class
 - compared to typename (对比类型名), 580
 - default access specifier (默认访问说明符), 240
 - default inheritance specifier (默认继承说明符), 546
 - template parameter (模板形参), 579
- class derivation list (类派生列表), 530
 - access control (访问控制), 543
 - default access specifier (默认访问说明符), 546
 - direct base class (直接基类), 533
 - indirect base class (间接基类), 533
 - multiple inheritance (多重继承), 710
 - virtual base class (虚基类), 718
- class template (类模板), 87, 117, 583, 584, 583–591, 630
 - see also* template parameter (参见“模板形参”)
 - see also* instantiation (参见“实例化”)
 - Blob, 584
 - declaration (声明), 592
 - default template argument (默认模板实参), 594
 - definition (定义), 583
 - error detection (错误检测), 582
 - explicit instantiation (显式实例化), 597, 597–598
 - explicit template argument (显式模板实参), 584
 - friend (友元), 588
 - all instantiations (全部实例化), 589
 - declaration dependencies (声明依赖性), 589
 - same instantiation (相同实例化), 588
 - specific instantiation (特定实例化), 589
 - instantiation (实例化), 584
 - member function (成员函数)
 - defined outside class body (定义在类的外部), 585
 - instantiation (实例化), 587
 - member template, *see* member template (成员模板)
 - specialization (特例化), 625, 626–629, 630
 - hash<key_type>, 626, 698
 - member (成员), 629
 - namespace (命名空间), 698
 - partial (部分), 628, 630
 - static member (静态成员), 590
 - accessed through an instantiation (通过实例访问), 591
 - definition (定义), 591
 - template argument (模板实参), 585
 - template parameter, used in definition (模板形参, 在定义中使用), 585
 - type parameter as friend (类型参数作为友元), 590
 - type-dependent code (类型相关的代码), 583
- class type (类类型), 17, 23
 - conversion (类型转换), 144, 273, 523
 - ambiguities (二义性), 521
 - conversion operator (类型转换运算符), 514
 - converting constructor (类型转换构造函数), 263
 - impact on function matching (对函数匹配的影响), 517
 - overloaded function (重载函数), 519
 - with standard conversion (与标准类型转换), 515
 - default initialization (默认初始化), 40
 - initialization (初始化), 65, 76, 235
 - union member of (union成员), 750
 - variable vs. function declaration (变量对比函数声明), 263
- clear
 - sequential container (顺序容器), 312
 - stream (流), 280
- clog, 5, 23
- close, file stream (文件流), 285
- cmath, 649
- cmath header (cmath头文件), 664, 669
- collapsing rule, reference (折叠规则, 引用), 609
- combine, Sales_data, 232
- comma (,) operator (逗号运算符), 140
- comment (注释), 8, 23
 - block (/* */) (块), 8, 23
 - single-line (//) (单行), 8, 23
- compare
 - default template argument (默认模板实参), 594

- function template (函数模板), 578
 - default template argument(默认模板实参), 594
 - explicit template argument (显式模板实参), 604
 - specialization (特例化), 624
 - string literal version (字符串字面值版本), 580
 - template argument deduction (模板实参推断), 602
- string, 326
- compareIsbn
 - and associative container (和关联容器), 379
 - Sales_data, 345
- compilation (编译)
 - common errors (一般错误), 14
 - compiler options (编译选项), 186
 - conditional (有条件的), 214
 - declaration vs. definition (声明与定义), 40
 - mixing C and C++ (混合C和C++), 760
 - needed when class changes (当类改变时需要), 242
 - templates (模板), 581
 - error detection (错误检测), 582
 - explicit instantiation (显式实例化), 597–598
- compiler (编译器)
 - extension (扩展), 102, 117
 - GNU, 4
 - Microsoft (微软), 4
 - options for separate compilation (单独编译选项), 186
- composition vs. inheritance (组合与继承), 564
- compound assignment (e.g., +=) (复合赋值, 如+=)
 - arithmetic operators (算术运算符), 131
 - bitwise operators (位运算符), 131
- compound expression, *see* expression (复合表达式, 参见“表达式”)
- compound statement (复合语句), 155, 178
- compound type (复合类型), 45, 45–52, 69
 - array (数组), 101
 - declaration style (声明形式), 51
 - understanding complicated declarations (理解复杂声明), 102
- concatenation (连接)
 - string, 80
 - string literal (字符串字面值常量), 36
- condition (条件), 10, 23
 - = (assignment) in (赋值), 130
 - conversion (类型转换), 141
 - do while statement (do while语句), 169
 - for statement (for语句), 11, 166
 - if statement (if语句), 16, 157
 - in IO expression (在输入输出表达式中), 138
 - logical operators (逻辑运算符), 123
 - smart pointer as (智能指针作为条件), 400
 - stream type as (流类型作为条件), 13, 144, 279
 - while statement (while语句), 10, 165
- condition state, IO classes (条件状态, 输入输出类), 279, 290
- conditional compilation (条件编译), 215
- conditional operator (?:) (条件运算符), 134
- connection, 416
- console window (控制台窗口), 4
- const, 53, 69
 - and typedef (和typedef), 60
 - conversion (类型转换), 144
 - template argument deduction (模板实参推断), 601
 - dynamically allocated (动态分配)
 - destruction (析构), 409
 - initialization (初始化), 408
 - initialization (初始化), 53
 - class type object (类类型对象), 236
 - low-level const (底层const), 57
 - argument and parameter (实参与形参), 191
 - conversion from (转换自), 145
 - conversion to (转换为), 144
 - overloaded function (重载函数), 208
 - template argument deduction (模板实参推断), 613
 - member function (成员函数), 231, 273
 - () (call operator) (调用运算符), 508
 - not constructors (非构造函数), 235
 - overloaded function (重载函数), 247
 - reference return (引用返回), 247
- parameter (形参), 190
 - function matching (函数匹配), 220
 - overloaded function (重载函数), 208
- pointer (指针), 56, 69
 - pointer to (指向), 56, 70
 - conversion from nonconst (转换自非常量), 144
 - initialization from nonconst (初始化自非常量), 56
 - overloaded parameter (重载形参), 208
- reference, *see* reference to const (引用, 参见“常量引用”)
- top-level const (顶层const), 57
 - and auto (和auto), 61
 - argument and parameter (实参与形参), 190
 - decltype, 63
 - parameter (形参), 208
 - template argument deduction (模板实参推断), 601
- variable (变量), 53
 - declared in header files (在头文件中声明), 67

- extern, 54
 - local to file (文件局部), 54
 - const_cast, 145, 145
 - const_iterator, container (const_iterator, 容器), 97, 297
 - const_reference, container(const_reference, 容器), 298
 - const_reverse_iterator, container (const_reverse_iterator, 容器), 298, 298
 - constant expression (常量表达式), 58, 69
 - array dimension (数组维度), 101
 - bit-field (位域), 756
 - case label (case 标签), 161
 - enumerator (枚举成员), 737
 - integral (整型), 58
 - nontype template parameter (无类型模板形参), 580
 - sizeof, 139
 - static data member (静态数据成员), 270
 - constexpr, 59, 69
 - constructor (构造函数), 267
 - declared in header files (在头文件中声明), 67
 - function (函数), 214, 225
 - nonconstant return value (非常量返回值), 214
 - function template (函数模板), 581
 - pointer (指针), 59
 - variable (变量), 59
 - construct
 - allocator, 428
 - forwards to constructor (转到构造函数), 468
 - constructor (构造函数), 235, 236, 235–238, 273
 - see also default constructor (参见“默认构造函数”)
 - see also copy constructor (参见“拷贝构造函数”)
 - see also move constructor (参见“移动构造函数”)
 - calls to virtual function (调用虚函数), 556
 - constexpr, 267
 - converting (转换), 263, 273
 - function matching (函数匹配), 518
 - Sales_data, 264
 - with standard conversion (与标准类型转换), 515
 - default argument (默认实参), 260
 - delegating (委托), 261, 274
 - derived class (派生类), 531
 - initializes direct base class (初始化直接基类), 541
 - initializes virtual base (初始化虚基类), 720
 - explicit, 265, 274
 - function try block (函数try块), 689, 723
 - inherited (继承), 557
 - initializer list (初始值列表), 237, 258–261, 273
 - class member initialization (类成员初始化), 245
 - compared to assignment (对比赋值), 258
 - derived class (派生类), 531
 - function try block (函数try块), 689, 723
 - sometimes required (有时必不可少), 258
 - virtual base class (虚基类), 720
- initializer_list parameter (initializer_list 形参), 587
 - not const (构造函数不能声明为 const), 235
 - order of initialization (初始化顺序), 259
 - derived class object (派生类对象), 531, 553
 - multiple inheritance (多重继承), 712
 - virtual base classes (虚基类), 720
 - overloaded (重载), 235
 - StrBlob, 405
 - StrBlobPtr, 421
 - TextQuery, 433
 - Blob, 586
 - initializer_list, 587
 - iterator parameters (迭代器形参), 596
 - Bulk_quote, 531, 541
 - Disc_quote, 540
 - Sales_data, 236–238
- container (容器), 86, 117, 292, 332
 - see also sequential container (参见“顺序容器”)
 - see also associative container (参见“关联容器”)
 - adaptor (适配器), 329, 329–330
 - equality and relational operators (相等性运算符和关系运算符), 329
 - initialization (初始化), 329
 - requirements on container (对容器的要求), 329
 - and inheritance (和继承), 558
 - as element type (作为元素类型), 87, 294
 - associative (关联的), 374, 397
 - copy initialization (拷贝初始化), 299
 - element type constraints (元素类型约束), 294, 305
 - elements and destructor (元素与析构函数), 445
 - elements are copies (元素是副本), 306
 - initialization from iterator range (由迭代器范围初始化), 300
 - list initialization (列表初始化), 300
 - members (成员)
 - see also iterator (参见“迭代器”)
 - = (assignment) (赋值), 302
 - == (equality) (相等), 304
 - != (inequality) (不相等), 304
 - begin, 95, 298, 332
 - cbegin, 98, 298, 299, 332
 - cend, 98, 298, 299, 332
 - const_iterator, 97, 297
 - const_reference, 298

- const_reverse_iterator, 296, 298
- crbegin, 298
- crend, 296
- difference_type, 117, 297
- empty, 78, 91, 117, 304
- end, 95, 117, 298, 332
- equality and relational operators (相等性运算符和关系运算符), 79, 91, 304
- iterator, 97, 297
- rbegin, 298, 363
- reference, 298
- relational operators (关系运算符), 304
- rend, 298, 363
- reverse_iterator, 298, 364
- size, 79, 91, 118, 304
- size_type, 79, 91, 118, 297
- swap, 303
- move operations (移动运算符), 469
 - moved-from object is valid but unspecified (源对象在移动后是有效的但值未指定), 475
- nonmember swap (非成员swap), 303
- of container (容器的), 87, 294
- overview (概览), 294
- sequential (顺序的), 292, 333
- type members, :: (scope operator) (类型成员, 作用域), 298
- continue statement (continue语句), 171, 178
- control, flow of (控制流), 10, 154, 178
- conversion (类型转换), 69, 141, 149
 - = (assignment) (赋值), 129, 141
 - ambiguous (二义性), 517–522
 - argument (实参), 183
 - arithmetic (算术), 33, 142, 149
 - array to pointer (数组转换为指针), 105
 - argument (实参), 192
 - exception object (异常对象), 686
 - multidimensional array (多维数组), 114
 - template argument deduction (模板实参推断), 601
 - base-to-derived, not automatic (从基类向派生类的转换, 非自动), 534
 - bool, 32
 - class type (类类型), 144, 263, 273, 523
 - ambiguities (二义性), 521
 - conversion operator (类型转换运算符), 514
 - function matching (函数匹配), 517, 519
 - with standard conversion (与标准类型转换), 515
 - condition (条件), 141
 - derived-to-base (从派生类向基类转换), 530, 575
 - accessibility (可访问性), 544
 - key concepts (关键概念), 537
 - shared_ptr, 559
 - floating-point (浮点), 33
 - function to pointer (函数转换为指针), 221
 - exception object (异常对象), 686
 - template argument deduction (模板实参推断), 601
 - integral promotion (整型提升), 142, 149
 - istream, 144
 - multiple inheritance (多重继承), 712
 - ambiguous (二义性), 713
 - narrowing (缩减), 39
 - operand (运算对象), 142
 - pointer to bool (指向bool的指针), 144
 - rank (排序), 219
 - return value (返回值), 200
 - Sales_data, 264
 - signed type (signed类型), 142
 - signed to unsigned (signed转换为unsigned), 32
 - to const (转换为const), 144
 - from pointer to nonconst (指向非常量的指针), 56
 - from reference to nonconst (指向非常量的引用), 55
 - template argument deduction (模板实参推断), 601
 - unscoped enumeration to integer (未指定作用域的枚举类型), 738
 - unsigned, 33
 - virtual base class (虚基类), 718
- conversion operator (类型转换运算符), 514, 514–520, 523
 - design (设计), 515
 - explicit, 516, 523
 - bool, 516
 - function matching (函数匹配), 518, 519
 - SmallInt, 514
 - used implicitly (隐式使用), 515
 - with standard conversion (与标准类型转换), 515
- converting constructor (类型转换构造函数), 263, 273
 - function matching (函数匹配), 518
 - with standard conversion (与标准类型转换), 515
- _copy algorithms (_copy算法), 342, 369
- copy, 341, 774
- copy and swap assignment (拷贝与交换赋值), 459
 - move assignment (移动赋值), 477
 - self-assignment (自赋值), 459
- copy assignment (拷贝赋值), 444, 486
 - = default, 449
 - = delete, 449
 - base from derived (由派生类构造的基类), 535
 - copy and swap (拷贝与交换), 459, 486

- derived class (派生类), 555
 - HasPtr
 - reference counted (引用计数), 456
 - valuelike (类值), 453
 - memberwise (逐个成员), 443
 - Message, 463
 - preventing copies (阻止拷贝), 449
 - private, 451
 - reference count (引用计数), 455
 - rule of three/five (三/五法则), **448**
 - virtual destructor exception (虚析构函数的例外), 552
 - self-assignment (自赋值), 453
 - StrVec, 467
 - synthesized (合成的), **444**, 487
 - deleted function (删除的函数), 450, 553
 - derived class (派生类), 553
 - multiple inheritance (多重继承), 712
 - union with class type member (含有类类型成员的联合), 753
 - valuelike class (类值类), 453
 - copy constructor (拷贝构造函数), **440**, 440–442, 486
 - = default, 449
 - = delete, 449
 - base from derived (由派生类构造的基类), 535
 - derived class (派生类), 555
 - HasPtr
 - reference counted (引用计数), 456
 - valuelike (类值), 453
 - memberwise (逐个成员), 441
 - Message, 462
 - parameter (形参), 440
 - preventing copies (阻止拷贝), 449
 - private, 451
 - reference count (引用计数), 455
 - rule of three/five (三/五法则), **448**
 - virtual destructor exception (虚析构函数异常), 552
 - StrVec, 467
 - synthesized (合成的), **441**, 487
 - deleted function (删除的函数), 450, 553
 - derived class (派生类), 553
 - multiple inheritance (多重继承), 712
 - union with class type member (含有类类型成员的union), 752
 - used for copy-initialization (用于拷贝初始化), 441
- copy control (拷贝控制), 239, **440**, 486
 - = delete, 449–450- inheritance (继承), 553–558
- memberwise (逐个成员), 239, 487
 - copy assignment (拷贝赋值), 444
 - copy constructor (拷贝构造函数), 441
 - move assignment (移动赋值), 476
 - move constructor (移动构造函数), 476
- multiple inheritance (多重继承), 712
- synthesized (合成的), 239
 - as deleted function (作为删除的函数), 450
 - as deleted in derived class (在派生类中作为删除的成员), 553
 - move operations as deleted function (移动操作作为删除的函数), 476
- unions, 751
- virtual base class, synthesized (虚基类, 合成的), 721

copy initialization (拷贝初始化), **76**, 117, **441**, 441–442, 486
 - array, 301
 - container (容器), 299
 - container elements (容器元素), 306
 - explicit constructor (显式构造函数), 442
 - invalid for arrays (对数组无效), 102
 - move vs. copy (移动与拷贝), 476
 - parameter and return value (形参和返回值), 442
 - uses copy constructor (使用拷贝构造函数), 441
 - uses move constructor (使用移动构造函数), 478

copy_backward, 774

copy_if, 774

copy_n, 774

copyUnion, Token, 753

count, reference (计数, 引用), 487

count
 - algorithm (算法), 337, 771
 - associative container (关联容器), 388, 389
 - bitset, 644

count_calls, program (count_calls程序), 185

count_if, 771

cout, 5, 23
 - tied to cin (绑定到cin), 282

cplusplus_primer, namespace (命名空间), 697

crbegin, container (容器), 298

cref, binds reference parameter (绑定引用形参), 356, 371

cregex_iterator, 649, 680

crend, container (容器), 298

cstdint header (头文件), 103, 107

cstdlib header (头文件), 48, 203, 689, 728

cstring
 - functions (函数), 109–110
 - header (头文件), 109

csub_match, 649, 680

ctime header (头文件), 663

curly brace (花括号), 2, 23

D

- dangling else (空悬else), 158, 178
- dangling pointer (空悬指针), 202, 411, 436
 - undefined behavior (未定义的行为), 413
- data abstraction (数据抽象), 228, 273
- data hiding (数据隐藏), 242
- data member, *see* class data member (数据成员, 参见“类数据成员”)
- data structure (数据结构), 17, 23
- deallocate, allocator, 429, 467
- debug_rep program (debug_rep程序)
 - additional nontemplate versions (额外的非模板版本), 617
 - general template version (通用模板版本), 615
 - nontemplate version (非模板版本), 616
 - pointer template version (指针模板版本), 615
- DebugDelete, member template (成员模板), 596
- dec, manipulator (操纵符), 667
- decimal, literal (十进制, 字面值常量), 35
- declaration (声明), 41, 69
 - class (类), 250, 273
 - class template (类模板), 592
 - class type, variable (类类型, 变量), 262
 - compound type (复合类型), 51
 - dependencies (依赖性)
 - member function as friend (成员函数作为友元), 252
 - overloaded templates (重载模板), 617
 - template friends (模板友元), 589
 - template instantiation (模板实例化), 582
 - template specializations (模板特例化), 625
 - variadic templates (可变参数模板), 620
- derived class (派生类), 532
- explicit instantiation (显式实例化), 597
- friend (友元), 241
- function template (函数模板), 592
- instantiation (实例化), 630
- member template (成员模板), 596
- template (模板), 592
- template specialization (模板特例化), 625
- type alias (类型别名), 60
- using, 74, 118
 - access control (访问控制), 545
 - overloaded inherited functions (重载继承的函数), 551
- variable (变量), 41
 - const, 54
- declarator (声明符), 45, 69
- decltype, 62, 69
 - array return type (数组返回类型), 206
- cbegin, 98, 338
- cend, 98, 338
- depends on form (依赖形式), 63
- for type abbreviation (为类型缩写), 79, 94, 115
- of array (数组的), 105
- of function (函数的), 223
- pointer to function (函数指针), 222
- top-level const (顶层const), 63
- yields lvalue (产生左值), 63, 121
- decrement operators (递减运算符), 131–133
- default argument (默认实参), 211, 225
 - adding default arguments (添加默认实参), 212
 - and header file (和头文件), 213
 - constructor (构造函数), 260
 - default constructor (默认构造函数), 260
 - function call (函数调用), 211
 - function matching (函数匹配), 217
 - initializer (初始值), 212
 - static member (静态成员), 271
 - virtual function (虚函数), 538
- default case label (default case标签), 162, 178
- default constructor (默认构造函数), 236, 274
 - = default, 237
 - = delete, 449
- default argument (默认实参), 260
- Sales_data, 235
- StrVec, 465
- synthesized (合成的), 236, 274
 - deleted function (删除的函数), 450, 553
 - derived class (派生类), 553
- Token, 751
- used implicitly (隐式使用)
- default initialization (默认初始化), 262
- value initialization (值初始化), 262
- default initialization (默认初始化), 39
 - array, 300
 - built-in type (内置类型), 39
 - class type (类类型), 40
 - string, 40, 76
 - uses default constructor (使用默认构造函数), 262
 - vector, 87
- default template argument (默认模板实参), 594
 - class template (类模板), 594
 - compare, 594
 - function template (函数模板), 594
 - template<>, 594
- default_random_engine, 659, 680
- defaultfloat manipulator (defaultfloat操纵符), 670
- definition (定义), 70
 - array (数组), 101
 - associative container (关联容器), 377
 - base class (基类), 527

- class (类), 64, 230–239
- class template (类模板), 583
 - member function (成员函数), 585
 - static member (静态成员), 590
- class template partial specialization (类模板部分特例化), 628
- derived class (派生类), 530
- dynamically allocated object (动态分配的对象), 407
- explicit instantiation (显式实例化), 597
- function, 512
- in if condition (在if条件中), 157
- in while condition (在while条件中), 165
- instantiation (实例化), 630
- member function (成员函数), 230–233
- multidimensional array (多维数组), 112
- namespace (命名空间), 695
 - can be discontinuous (允许不连续), 696
 - member (成员), 698
- overloaded operator (重载运算符), 443, 490
- pair, 379
- pointer (指针), 47
- pointer to function (函数指针), 221
- pointer to member (成员指针), 740
- reference (引用), 46
- sequential container (顺序容器), 299
- shared_ptr, 400
- static member (静态成员), 270
- string, 76
- template specialization (模板特例化), 624–629
- unique_ptr, 417, 419
- variable (变量), 38, 41
 - const, 54
- variable after case label (case标签后的变量), 163
- vector, 87
- weak_ptr, 420
- delegating constructor (委托构造函数), 261, 274
- delete, 409, 409–411, 436
 - const object (const对象), 409
 - execution flow (执行流程), 726
 - memory leak (内存泄露), 410
 - null pointer (空指针), 410
 - pointer (指针), 409
 - runs destructor (运行析构函数), 445
- delete [], dynamically allocated array (动态分配的数组), 424
- deleted function (删除的函数), 449, 486
- deleter (删除器), 416, 436
 - shared_ptr, 416, 426, 436
 - unique_ptr, 419, 436
- deprecated (已弃用的), 357
- auto_ptr, 419
- binary_function, 513
- bind1st, 357
- bind2nd, 357
- generalized exception specification (泛化异常说明), 691
- ptr_fun, 357
- unary_function, 513
- deque, 332
 - see also container, container member (参见“容器”和“容器成员”)
 - see also sequential container (参见“顺序容器”)
 - [](subscript) (下标), 310
 - at, 310
 - header (头文件), 294
 - initialization (初始化), 299–301
 - list initialization (列表初始化), 300
 - overview (概述), 292
 - push_back, invalidates iterator (令迭代器无效), 315
 - push_front, invalidates iterator (令迭代器无效), 315
 - random-access iterator (随机访问迭代器), 367
 - value initialization (值初始化), 300
- deref, StrBlobPtr, 422
- derived class (派生类), 526, 575
 - see also virtual function (参见“虚函数”)
 - :: (scope operator) to access baseclass member (基类成员的作用域运算符), 539
 - = (assignment) (赋值), 555
 - access control (访问控制), 544
 - as base class (作为基类), 533
 - assigned or copied to base object (赋值或拷贝给基类), 535
 - base-to-derived conversion, not automatic (基类向派生类的转换, 非自动), 534
 - constructor (构造函数), 531
 - initializer list (初始值列表), 531
 - initializes direct base class (初始化直接基类), 541
 - initializes virtual base (初始化虚基类), 720
 - copy assignment (拷贝赋值), 555
 - copy constructor (拷贝构造函数), 555
 - declaration (声明), 472
 - default derivation specifier (默认派生说明符), 546
 - definition (定义), 530
 - derivation list (派生列表), 530, 575
 - access control (访问控制), 543
 - derived object (派生类对象)
 - contains base part (包含基类部分), 530
 - multiple inheritance (多重继承), 710
 - derived-to-base conversion (派生类到基类的类型

- 转换), 530
 - accessibility (可访问性), 544
 - key concepts (关键概念), 537
 - multiple inheritance (多重继承), 712
- destructor (析构函数), 556
- direct base class (直接基类), 533, 575
- final, 472
- friendship not inherited (友元关系不可继承), 545
- indirect base class (间接基类), 533, 576
- is user of base class (是基类的成员), 544
- member new and delete (作为成员的新和delete), 727
- move assignment (移动赋值), 555
- move constructor (移动构造函数), 555
- multiple inheritance (多重继承), 710
- name lookup (名字查找), 547
- order of destruction (析构顺序), 556
 - multiple inheritance (多重继承), 712
- order of initialization (初始化顺序), 531, 553
 - multiple inheritance (多重继承), 712
 - virtual base classes (虚基类), 720
- scope (作用域), 547
 - hidden base members (隐藏基类成员), 549
 - inheritance (继承), 547–551
 - multiple inheritance (多重继承), 715
 - name lookup (名字查找), 547
 - virtual function (虚函数), 550
- static members (静态成员), 532
- synthesized (合成的)
 - copy control members (拷贝控制成员), 553
 - deleted copy control members (删除的拷贝控制成员), 553
- using declaration (using声明)
 - access control (访问控制), 544
 - overloaded inherited functions (重载继承的函数), 551
 - virtual function (虚函数), 530
- derived-to-base conversion (派生类到基类的类型转换), 530, 575
 - accessible (可访问的), 544
 - key concepts (关键概念), 537
 - multiple inheritance (多重继承), 712
 - not base-to-derived (不存在基类向派生类的转换), 534
 - shared_ptr, 559
- design (设计)
 - access control (访问控制), 544
 - Bulk_quote, 526
 - conversion operator (类型转换运算符), 515
 - Disc_quote, 540
 - equality and relational operators (相等性运算符和关系运算符), 498
 - generic programs (泛型程序), 581
 - inheritance (继承), 564
 - Message class (Message类), 460
 - namespace (命名空间), 696
 - overloaded operator (重载运算符), 491–493
 - Query classes (Query类), 564–566
 - Quote, 526
 - reference count (引用计数), 455
 - StrVec, 464
- destination sequence (目的序列), 340, 368
- destroy, allocator, 428, 467
- destructor (析构函数), 402, 436, 444, 444–446, 486
 - = default, 449
 - called during exception handling (在异常处理过程中调用), 685
 - calls to virtual function (调用虚函数), 556
 - container elements (容器元素), 445
 - derived class (派生类), 556
 - doesn't delete pointer members (不删除指针成员), 446
 - explicit call to (显式调用), 729
- HasPtr
 - reference counted (引用计数), 456
 - valuelike (类值), 453
- local variables (局部变量), 445
- Message, 462
- not deleted function (不应该是删除的函数), 450
- not private (不是私有的), 451
- order of destruction (析构顺序), 445
 - derived class (派生类), 556
 - multiple inheritance (多重继承), 712
 - virtual base classes (虚基类), 721
- reference count (引用计数), 455
- rule of three/five (三/五法则), 447
 - virtual destructor, exception (虚析构函数, 异常), 552
- run by delete (由delete运行), 445
- shared_ptr, 402
- should not throw exception (不应该抛出异常), 685
- StrVec, 467
- synthesized (合成的), 446, 487
 - deleted function (删除的函数), 450, 553
 - derived class (派生类), 553
 - multiple inheritance (多重继承), 712
- Token, 751
- valuelike class (类值类), 453
- virtual function (虚函数), 552
- virtual in base class (基类中的虚函数), 552
- development environment, integrated (集成开发环境), 3
- difference_type, 100
- vector, 100

- container (容器), 117, 297
 - string, **100**
- direct base class (直接基类), 533
- direct initialization (直接初始化), 76, 117
 - emplace members use (成员使用), 308
- Disc_quote
 - abstract base class (抽象基类), 541
 - class definition (类定义), 540
 - constructor (构造函数), 541
 - design (设计), 540
- discriminant (判别式), 751, 762
 - Token, 751
- distribution types (分布类型)
 - bernoulli_distribution, 665
 - default template argument (默认模板实参), 664
 - normal_distribution, 664
 - random-number library (随机数标准库), **659**
 - uniform_int_distribution, 661
 - uniform_real_distribution, 664
- divides<T>, 510
- division rounding (除法取整), 125
- do while statement (do while语句), **169**, 178
- domain_error, 176
- double, 30
 - literal (numEnum or numenum)(字面值常量), 35
 - output format (输出格式), 668
 - output notation (输出记数法), 670
- dynamic binding (动态绑定), 527, 575
 - requirements for (要求), 535
 - static vs. dynamic type (静态类型与动态类型), 537
- dynamic type (动态类型), **534**, 575
- dynamic_cast, **144**, 730, **730**, 762
 - bad_cast, 731
 - to pointer (指针的), 730
 - to reference (引用的), 731
- dynamically allocated (动态分配), **400**, 436
 - array (数组), **423**, 423–429
 - allocator, 427
 - can't use begin and end (无法调用begin或end), 424
 - can't use range for statement (无法使用范围for语句), 424
 - delete[], 425
 - empty array (空数组), 424
 - new[], 424
 - returns pointer to an element (返回指向元素的指针), 424
 - shared_ptr, 426
 - unique_ptr, 425
 - delete runs destructor(delete运行析构函数), 445

- lifetime (生存期), 400
- new runs constructor (new运行构造函数), 407
- object (对象), 407–411
 - const object (常量对象), 408
 - delete, 409
 - factory program (factory程序), 409
 - initialization (初始化), 407
 - make_shared, 401
 - new, 407
 - shared objects (共享对象), 404, 431
 - shared_ptr, 412
 - unique_ptr, 417

E

- echo command (echo命令), 4
- ECMAScript, 646, 654
 - regular expression library (正则表达式库), 646
- edit-compile-debug (编辑-编译-调试), **15**, 23
 - errors at link time (链接时错误), 582
- element type constraints, container (元素类型约束, 容器), 294, 304
- elimDups program (elimDups程序), 342–348
- ellipsis, parameter (省略符形参), 199
- else, see if statement (参见“if语句”)
- emplace
 - associative container (关联容器), 384
 - priority_queue, 330
 - queue, 330
 - sequential container (顺序容器), **308**
 - stack, 330
- emplace_back
 - sequential container (顺序容器), **308**
 - StrVec, 623
- emplace_front, sequential container (顺序容器), **308**
- empty
 - container (容器), **78**, 92, 117, 304
 - priority_queue, 330
 - queue, 330
 - stack, 330
- encapsulation (封装), **228**, 274
 - benefits of (益处), 242
- end
 - associative container (关联容器), 382
 - container (容器), **95**, 117, 298, 332
 - function (函数), **106**, 117
 - multidimensional array (多维数组), 115
 - StrBlob, 422
 - StrVec, 465
- end-of-file (文件结束), **13**, 23, 674
 - character (字符), 13

- Endangered, 710
- endl, 6
 - manipulator (操纵符), 282
- ends, manipulator (操纵符), 282
- engine, random-number library (标准库随机数引擎), 660, 680
 - default_random_engine, 660
 - max, min, 661
 - retain state (保持状态), 662
 - seed, 662, 681
- enum, unscoped enumeration (不限定作用域的枚举类型), 737
- enum class, scoped enumeration (限定作用域的枚举类型), 736
- enumeration (枚举类型), 736, 762
 - as union discriminant (作为union判别式), 752
 - function matching (函数匹配), 739
 - scoped (限定作用域的), 736, 763
 - unscoped (不限定作用域的), 736, 763
 - conversion to integer (转换为整数), 738
 - unnamed (未命名的), 736
- enumerator (枚举成员), 736, 762
 - constant expression (常量表达式), 737
 - conversion to integer (转换为整数), 738
- eof, 280
- eofbit, 280
- equal, 339, 772
- equal virtual function (虚函数), 734
- equal_range
 - algorithm (算法), 639, 773
 - associative container (关联容器), 390
- equal_to<T>, 509
- equality operators (相等运算符), 126
 - arithmetic conversion (算术类型转换), 128
 - container adaptor (容器适配器), 329
 - container member (容器成员), 304
 - iterator (迭代器), 95
 - overloaded operator (重载运算符), 498
 - pointer (指针), 107
 - Sales_data, 497
 - string, 79
 - vector, 91
- erase
 - associative container (关联容器), 386
 - changes container size (改变容器大小), 344
 - invalidates iterator (令迭代器无效), 312
 - sequential container (顺序容器), 311
 - string, 323
- error, standard (错误, 标准), 5
- error_type, 649
- error_msg program (error_msg程序), 198
- ERRORLEVEL, 4
- escape sequence (转义序列), 36, 70
 - hexadecimal (\Xnnn) (十六进制), 36
 - octal (\nnn) (八进制), 36
- eval function (eval函数)
 - AndQuery, 572
 - NotQuery, 573
 - OrQuery, 572
- exception
 - class (类), 173, 178
 - class hierarchy (类层次), 693
 - deriving from (派生自), 692
 - Sales_data, 694
 - header (头文件), 176
 - initialization (初始化), 176
 - what, 175, 693
- exception handling (异常处理), 173–177, 684, 722
 - see also throw (参见throw)
 - see also catch (参见catch)
- exception declaration (异常声明), 174, 687, 722
 - and inheritance (和继承), 687
 - must be complete type (必须是完整类型), 687
- exception in destructor (析构函数的异常), 685
- exception object (异常对象), 686, 723
 - finding a catch (找到一个catch), 687
 - function try block (函数try块), 689, 724
 - handler, see catch (处理代码, 见catch)
 - local variables destroyed (局部变量销毁), 685
 - noexcept specification (noexcept说明), 473, 690, 723
 - nonthrowing function (不抛出异常的函数), 690, 723
 - safe resource allocation (安全资源分配), 415
 - stack unwinding (栈展开), 685, 723
 - terminate function (terminate函数), 175, 179
 - try block (try块), 174, 684
 - uncaught exception (未捕获的异常), 685
 - unhandled exception (未处理的异常), 175
- exception object (异常对象), 686, 722
 - catch, 687
 - conversion to pointer (转换为指针), 686
 - initializes catch parameter (初始化catch形参), 687
 - pointer to local object (局部对象的指针), 686
 - rethrow (重新抛出), 688
- exception safety (异常安全), 175, 179
 - smart pointers (智能指针), 415
- exception specification (异常说明)
 - argument (实参), 691
 - generalized, deprecated (更一般化的版本已弃用), 691
 - noexcept, 690

nonthrowing (不抛出异常), 690
pointer to function (函数指针), 690, 692
throw(), 691
violation (违反), 690
virtual function (虚函数), 692
executable file (可执行文件), 4, 225
execution flow (执行流程)
 {} (call operator) (调用运算符), 183
 delete, 726
 for statement (for语句), 166
 new, 726
 switch statement (switch语句), 161
 throw, 174, 684
EXIT_FAILURE, 203
EXIT_SUCCESS, 204
expansion (扩展)
 forward, 623
 parameter pack (参数包), 620, 620–622, 630
 function parameter pack (函数参数包), 621
 template parameter pack (模板参数包), 621
 pattern (模式), 621
explicit
 constructor (构造函数), 265, 273
 copy initialization (拷贝初始化), 442
 conversion operator (类型转换运算符), 516, 523
 conversion to bool (转换为bool), 516
explicit call to (显式调用)
 destructor (析构函数), 730
 overloaded operator (重载运算符), 491
 postfix operators (后置运算符), 504
explicit instantiation (显式实例化), 597, 630
explicit template argument (显式模板实参), 584, 630
 class template (类模板), 584
 forward, 614
 function template (函数模板), 603
 function pointer (函数指针), 607
 template argument deduction (模板实参推断), 604
exporting C++ to C (导出C++到C), 760
expression (表达式), 6, 23, 120, 149
 callable, *see* callable object (可调用的, 参见“可调用对象”)
 constant (常量), 58, 69
 lambda, *see* lambda expression (lambda, 参见“lambda表达式”)
 operand conversion (运算对象类型转换), 142
 order of evaluation (求值顺序), 123
 parenthesized (括号之中的), 122
 precedence and associativity (优先级和结合律), 121–123
 regular, *see* regular expression (正则, 参见“正则表达式”)
expression statement (表达式语句), 154, 179

extension, compiler (编译器扩展), 102, 117
extern
 and const variables (和const变量), 54
 explicit instantiation (显式实例化), 597
 variable declaration (变量声明), 41
extern 'C', *see* linkage directive (参见“链接指示”)

F

fact program (fact程序), 182
factorial program (factorial程序), 204
factory program (factory程序)
 new, 410
 shared_ptr, 402
fail, 280
failbit, 279
failure (失败), new, 408
file, source (源文件), 3
file extension, program (文件扩展, 程序), 647
 version 2 (版本2), 654
file marker, stream (文件标记, 流), 676
file mode (文件模式), 286, 290
file redirection (文件重定向), 19
file static (文件中的静态声明), 701, 723
file stream, *see* fstream (文件流, 参见fstream)
fill, 340, 773
fill_n, 340, 773
final specifier (final说明符), 533
 class (类), 533
 virtual function (虚函数), 538
find
 algorithm (算法), 336, 771
 associative container (关联容器), 388, 389
 string, 324
find last word program (找出最后一个词的程序), 364
find_char program (find_char程序), 189
find_first_of, 772
find_first_not_of, string, 325
find_first_of, 772
 string, 325
find_if, 346, 354, 369, 771
find_if_not, 771
find_if_not_of, 771
find_last_not_of, string, 326
find_last_of, string, 326
findBook, program (findBook程序), 639
fixed manipulator (fixed操纵符), 670
flip
 bitset, 644
 program (程序), 614
flip1, program (flip1程序), 612
flip2, program (flip2程序), 613

- float, 30
 - literal (*numF* or *numf*) (字面值常量), 37
- floating-point (浮点), 30
 - conversion (类型转换), 32
 - literal (字面值常量), 35
 - output format (输出格式), 668
 - output notation (输出记号), 670
- flow of control (控制流), 10, 154, 179
- flush, manipulator (*flush*操纵符), 282
- Folder, 参见 Message
- for statement (*for*语句), 11, 24, 166, 166–168, 179
 - condition (条件), 10
 - execution flow (执行流程), 166
 - for* header (*for*语句头), 166
 - range (范围), 82, 168, 168–169, 179
 - can't add elements (无法添加元素), 90, 168
 - multidimensional array (多维数组), 114
- for_each*, 348, 772
- format state, stream (流格式化状态), 667
- formatted IO (格式化的输入输出), 673, 680
- forward, 614
 - argument-dependent lookup (实参相关的查找), 707
 - explicit template argument (显式模板实参), 614
 - pack expansion (包扩展), 623
 - passes argument type unchanged (传递过程中保持参数类型不变), 614, 623
 - usage pattern (用法模式), 624
- forward declaration, class (类前向声明), 250, 274
- forward iterator (前向迭代器), 366, 371
- forward_list*
 - see also container (参见“容器”)
 - see also sequential container (参见“顺序容器”)
 - before_begin*, 313
 - forward iterator (前向迭代器), 366
 - header (头文件), 294
 - initialization (初始化), 299–301
 - list initialization (列表初始化), 300
 - merge, 369
 - overview (概览), 294
 - remove, 369
 - remove_if*, 369
 - reverse, 369
 - splice_after*, 370
 - unique, 369
 - value initialization (值初始化), 300
- forwarding (转发), 612–614
 - passes argument type unchanged (传递过程中保持参数类型不变), 614
 - preserving type information (保持类型信息), 613
 - rvalue reference parameters (右值引用形参), 613, 623
 - typical implementation (典型实现), 624
 - variadic template (可变参数模板), 622
- free*, *StrVec*, 467
- free library function (*free*标准库函数), 728, 762
- free store (自由空间), 400, 436
- friend (友元), 241, 274
 - class (类), 251
 - class template type parameter (类模板类型形参), 590
 - declaration (声明), 241
 - declaration dependencies (声明依赖性)
 - member function as friend (成员函数作为友元), 252
 - template friends (模板友元), 589
 - function (函数), 241
 - inheritance (继承), 544
 - member function (成员函数), 251, 252
 - overloaded function (重载函数), 252
 - scope (作用域), 242, 252
 - namespace (命名空间), 707
 - template as (模板), 588
- front
 - queue, 330
 - sequential container (顺序容器), 309
 - StrBlob*, 406
- front_inserter*, 358, 371
 - compared to *inserter* (对比 *inserter*), 358
 - requires *push_front* (需要 *push_front*), 358
- fstream*, 283–286
 - close, 285
 - file marker (文件标记), 676
 - file mode (文件模式), 286
 - header (头文件), 278, 283
 - initialization (初始化), 284
 - off_type*, 677
 - open, 284
 - pos_type*, 677
 - random access (随机访问), 676
 - random IO program (随机输入输出程序), 677
 - seek*和*tell*, 675–679
- function (函数), 2, 24, 182, 225
 - see also return type (参见“返回类型”)
 - see also return value (参见“返回值”)
 - block (块), 184
 - body (体), 2, 24, 182, 225
 - callable object (可调用对象), 346
 - candidate (候选), 225
 - candidate function (候选函数), 217
 - constexpr*, 214, 225
 - nonconstant return value (非常量返回值), 214
 - declaration (声明), 186
 - declaration and header file (声明与头文件), 186

- `decltype` returns function type (`decltype`返回函数类型), 223
 - default argument (默认实参), 211, 225
 - adding default arguments (添加默认实参), 212
 - and header file (和头文件), 213
 - initializer (初始值), 212
 - deleted (删除的), 449, 486
 - function matching (函数匹配), 450
 - exception specification (异常说明)
 - `noexcept`, 690
 - `throw()`, 691
 - friend (友元), 241
 - function to pointer conversion (函数向指针的类型转换), 221
 - `inline`, 213, 225
 - and header (和头文件), 215
 - linkage directive (链接指示), 760
 - member, *see* member function (成员, 参见“成员函数”)
 - name (名字), 2, 24
 - nonthrowing (不抛出异常), 690, 723
 - overloaded (重载)
 - compared to redeclaration (对比重新声明), 207
 - friend declaration (友元声明), 252
 - scope (作用域), 210
 - parameter, *see* parameter (形参)
 - parameter list (形参列表), 2, 24, 182, 183
 - prototype (原型), 186, 225
 - recursive (递归), 204
 - variadic template (可变参数模板), 620
 - scope (作用域), 184
 - viable (可行的), 226
 - viable function (可行函数), 217
 - virtual, *see* virtual function (虚, 见虚函数)
- function, 512, 511–514, 523
- and pointer to member (和成员指针), 745
 - definition (定义), 511
 - desk calculator (桌面计算器), 511
- function call (函数调用)
- ambiguous (二义性), 209, 219, 225
 - default argument (默认实参), 211
 - execution flow (执行流程), 183
 - overhead (开销), 213
 - through pointer to function (通过函数指针), 221
 - through pointer to member (通过成员指针), 742
 - to overloaded operator (重载运算符), 491
 - to overloaded postfix operator (重载后置运算符), 504
- function matching (函数匹配), 208, 225
- `= delete`, 450
 - argument, conversion (实参, 类型转换), 209
 - candidate function (候选函数), 217
 - overloaded operator (重载运算符), 521
 - `const` arguments (常量实参), 220
 - conversion, class type (类类型转换), 516–520
 - conversion operator (类型转换运算符), 518, 519
 - conversion rank (转换顺序), 219
 - class type conversions (类类型转换), 519
 - default argument (默认实参), 217
 - enumeration (枚举), 739
 - function template (函数模板), 614–618
 - specialization (特例化), 625
 - integral promotions (整型提升), 219
 - member function (成员函数), 244
 - multiple parameters (多个形参), 218
 - namespace (命名空间), 708
 - overloaded operator (重载运算符), 520–522
 - prefers more specialized function (更特例化的函数优先), 615
 - rvalue reference (右值引用), 477
 - variadic template (可变参数模板), 620
 - viable function (可行函数), 217
- function object (函数对象), 506, 523
- argument to algorithms (算法实参), 507
 - arithmetic operators (算术运算符), 509
 - is callable object (是可调对象), 506
- function parameter, *see* parameter (函数形参, 参见“形参”)
- function parameter pack (函数参数包), 618
- expansion (扩展), 621
 - pattern (模式), 622
- function pointer (函数指针), 221–223
- callable object (可调对象), 346
 - definition (定义), 221
 - exception specification (异常说明), 690, 692
 - function template instantiation (函数模板实例化), 607
 - overloaded function (重载函数), 222
 - parameter (形参), 222
 - return type (返回类型), 184, 223
 - using `decltype` (使用`decltype`), 223
 - template argument deduction (模板实参推断), 607
 - type alias declaration (类型别名声明), 222
 - `typedef` (定义类型别名), 222
- function table (函数表), 511, 511, 523, 743
- function template (函数模板), 578, 630
- see also* template parameter (参见“模板形参”)
 - see also* template argument deduction (参见“模板实参推断”)
 - see also* instantiation (参见“实例化”)
 - argument conversion (实参类型转换), 602
 - array function parameters (数组函数形参), 580
 - candidate function (候选函数), 615
 - compare, 578

- string literal version (字符串字面值版本), 580
- constexpr, 581
- declaration (声明), 592
- default template argument (默认模板实参), 594
- error detection (错误检测), 582
- explicit instantiation (显式实例化), 597, 597–598
- explicit template argument (显式模板实参), 603
 - compare, 604
- function matching (函数匹配), 614–618
- inline function (内联函数), 581
- nontype parameter (非类型形参), 580
- overloaded function (重载函数), 614–618
- parameter pack (参数包), 630
- specialization (特例化), 625, 630
 - compare, 624
 - function matching (函数匹配), 625
 - is an instantiation (是一个实例), 625
 - namespace (命名空间), 698
 - scope (作用域), 626
 - vs. overloading (对比重载), 625
- trailing return type (尾置返回类型), 605
- type-dependent code (类型相关的代码), 583
- function try block (函数try块), 689, 724
- functional header (functional头文件), 354, 356, 357, 509, 512, 746

G

- g++, 4
- gcount, istream, 675
- generate, 773
- generate_n, 773
- generic algorithms, *see* algorithms (泛型算法, 参见“算法”)
- generic programming (泛型编程), 97
 - type-independent code (类型相关的代码), 581
- get
 - istream, 673
 - multi-byte version (多字节版本), istream, 674
 - returns int (返回int), istream, 674, 676
- get<n>, 637, 680
- getline, 78, 117
 - istream, 674
 - istringstream, 288
 - TextQuery constructor (TextQuery构造函数), 433
- global function (全局函数)
 - operator delete, 762
 - operator new, 762
- global namespace (全局命名空间), 698, 723
 - :: (scope operator) (作用域运算符), 699, 724
- global scope (全局作用域), 44, 70

- global variable, lifetime (全局变量, 生命周期), 184
- GNU compiler (GNU编译器), 4
- good, 280
- goto statement (goto语句), 172, 179
- grade clusters program (成绩聚合程序), 92
- greater<T>, 510
- greater_equal<T>, 510

H

- .h file header (.h头文件), 17
- handler, *see* catch (处理代码, 参见catch)
- has-a relationship (有一个……关系), 564
- hash<key_type>, 396, 397
 - override (重载), 396
 - specialization (特例化), 627, 698
 - compatiblewith == (equality) (与相等运算符兼容), 627
- hash function (哈希函数), 394, 397
- HasPtr
 - reference counted (引用计数), 455–456
 - copy assignment (拷贝赋值), 456
 - destructor (析构函数), 456
 - valuelike (类值), 453
 - copy assignment (拷贝赋值), 453
 - move assignment (移动赋值), 477
 - move constructor (移动构造函数), 477
 - swap, 457
- header (头文件), 6, 24
 - iostream, 24
 - C library (C标准库), 82
 - Const and constexpr (const和constexpr), 67
 - default argument (默认实参), 213
 - function declaration (函数声明), 186
 - .h file (.h文件), 17
 - #include, 5, 18
 - inline function (内联函数), 214
 - inline member function definition (内联成员函数定义), 244
 - namespace members (命名空间成员), 696
 - standard (标准), 5
 - table of library names (标准库名字表), 766
 - template definition (模板定义), 581
 - template specialization (模板特例化), 625
 - user-defined (用户定义的), 18, 67–68, 186, 214
 - using declaration (using声明), 74
 - Sales_data.h, 67
 - Sales_item.h, 17
 - algorithm, 336
 - array, 293
 - bitset, 641

- cassert, 215
- cctype, 82
- cmath, 664, 669
- cstddef, 103, 107
- cstdlib, 49, 203, 689, 728
- cstring, 109
- ctime, 663
- deque, 294
- exception, 176
- forward_list, 294
- fstream, 278, 283
- functional, 354, 356, 357, 509, 512, 746
- initializer_list, 197
- iomanip, 669
- iostream, 5, 278, 676
- iterator, 106, 341, 358
- list, 294
- map, 374
- memory, 400, 401, 427, 429
- new, 176, 409, 424, 726
- numeric, 336, 780
- queue, 330
- random, 660
- regex, 645
- set, 374
- sstream, 278, 287
- stack, 330
- stdexcept, 174, 176
- string, 66, 67, 76
- tuple, 636
- type_info, 176
- type_traits, 605
- typeinfo, 731, 732, 735
- unordered_map, 374
- unordered_set, 374
- utility, 379, 469, 472, 614
- vector, 86, 294
- header guard (头文件保护符), 68, 70
 - preprocessor (预处理器), 68
- heap (堆), 400, 436
- hex, manipulator (操纵符), 667
- hexadecimal (十六进制)
 - escape sequence (`\Xnnn`) (转义序列), 36
 - literal (`0Xnumor 0xnum`) (字面值常量), 35
- hexfloat manipulator (操纵符), 670
- high-order bits (高位), 641, 680
- I**
- i before e, program (查找i在e之前的文本的程序), 646
 - version 2 (版本2), 650
- IDE (集成开发环境), 3
- identifier (标识符), 42, 70
 - reserved (保留的), 42
- _if algorithms (`_if`算法), 368
- if statement (if语句), 15, 24, 156, 156–159, 179
 - compared to switch (对比switch), 159
 - condition (条件), 16, 156
 - dangling else (空悬else), 158
 - else branch (else分支), 16, 156, 178
- ifstream, 279, 283–286, 290
 - see also istream (参见istream)
 - close, 285
 - file marker (文件标记), 676
 - file mode (文件模式), 286
 - initialization (初始化), 284
 - off_type, 677
 - open, 285
 - pos_type, 677
 - random access (随机访问), 676
 - random IO program (随机输入输出程序), 676
 - seek与tell, 676–680
- ignore, istream, 675
- implementation (实现), 228, 228, 274
- in (file mode) (文件模式), 286
- in scope (在作用域中), 44, 70
- in-class initializer (类内初始值), 65, 65, 70, 237, 238, 246
- #include
 - standard header (标准头文件), 6, 17
 - user-defined header (用户定义的头文件), 17
- includes, 778
- incomplete type (不完全类型), 250, 274
 - can't be base class (不能是基类), 533
 - not in exception declaration (不能在异常声明中), 687
 - restrictions on use (用法约束), 250
- incr, StrBlobPtr, 422
- increment operators (递增运算符), 131–133
- indentation (缩进), 16, 158
- index (索引), 84, 117
 - see also [](subscript) (参见“下标”)
- indirect base class (间接基类), 533, 576
- inferred return type, lambda expression (推断返回类型, lambda表达式), 353
- inheritance (继承), 576
 - and container (和容器), 558
 - conversions (类型转换), 536
 - copy control (拷贝控制), 552–557
 - friend (友元), 544
 - hierarchy (层次), 526, 532
 - interface class (接口类), 565
 - IO classes (输入输出类), 279, 290
 - name collisions (名字冲突), 548

- private, 543, 576
- protected, 543, 576
- public, 543, 576
- vs. composition (对比组合), 564
- inherited, constructor (继承的构造函数), 557
- initialization (初始化)
 - aggregate class (聚合类), 266
 - array (数组), 102
 - associative container (关联容器), 376, 377
 - bitset, 641–643
 - C-style string (C风格字符串), 109
 - class type objects (类类型对象), 65, 235
 - const
 - static data member (静态数据成员), 270
 - class type object (类类型对象), 235
 - data member (数据成员), 259
 - object (对象), 53
 - copy (拷贝), 76, 117, 441, 441–442, 486
 - default (默认), 40, 262
 - direct (直接), 76, 117
 - dynamically allocated object (动态分配对象), 407
 - exception, 176
 - istream_iterator, 361
 - list, *see* list initialization (列表, 参见“列表初始化”)
 - lvalue reference (左值引用), 471
 - multidimensional array (多维数组), 112
 - new [], 424
 - ostream_iterator, 361
 - pair, 379
 - parameter (形参), 183, 187
 - pointer (指针), 47–48
 - to const (指向常量的), 56
 - queue, 329
 - reference (引用), 46
 - data member (数据成员), 259
 - to const (对常量的), 54
 - return value (返回值), 200
 - rvalue reference (右值引用), 471
 - sequential container (顺序容器), 299–301
 - shared_ptr, 412
 - stack, 329
 - string, 75–76, 320–322
 - string streams (字符串流), 287
 - tuple, 636
 - unique_ptr, 417
 - value (值), 88, 118, 262
 - variable (变量), 38, 39, 71
 - vector, 86–89
 - vs. assignment (对比赋值), 39, 258
 - weak_ptr, 420
- initializer_list, 197, 197–199, 225
- = (assignment) (赋值), 499
- constructor (构造函数), 587
- header (头文件), 197
- inline function (内联函数), 213, 225
 - and header (和头文件), 215
 - function template (函数模板), 581
 - member function (成员函数), 230, 244
 - and header (和头文件), 244
- inline namespace (内联命名空间), 699, 723
- inner scope (内层作用域), 44, 70
- inner_product, 780
- inplace_merge, 775
- input, standard (输入, 标准), 5
- input iterator (输入迭代器), 366, 371
- insert
 - associative container (关联容器), 384
 - multiple key container (多关键字容器), 385
 - sequential container (顺序容器), 306
 - string, 323
- insert iterator (插入迭代器), 341, 357, 358, 371
 - back_inserter, 358
 - front_inserter, 358
 - inserter, 358
- inserter, 358, 371
 - compared to front_inserter (对比 front_inserter), 358
- instantiation (实例化), 87, 117, 579, 582, 630
 - Blob, 584
 - class template (类模板), 584
 - member function (成员函数), 587
 - declaration (声明), 630
 - definition (定义), 630
 - error detection (错误检测), 582
 - explicit (显式), 597–598
 - function template from function pointer (来自函数指针的函数模板), 607
 - member template (成员模板), 597
 - static member (static成员), 591
- int, 30
 - literal (字面值常量), 35
- integral (整型)
 - constant expression (常量表达式), 58
 - promotion (提升), 120, 142, 150
 - function matching (函数匹配), 220
 - type (类型), 30, 71
- integrated development environment (集成开发环境), 3
- interface (接口), 228, 274
- internal, manipulator (操纵符), 671
- interval, left-inclusive (左闭合区间), 333
- invalid pointer (无效指针), 47
- invalid_argument, 176
- invalidated iterator (无效迭代器)

- and container operations (和容器操作), 315
- undefined behavior (未定义的行为), 315
- invalidates iterator (令迭代器无效)
 - assign, 302
 - erase, 312
 - resize, 314
- IO (输入输出)
 - formatted (格式化的), 673, 680
 - unformatted (未格式化的), 673, 681
- IO classes (输入输出类)
 - condition state (条件状态), 279, 290
 - inheritance (继承), 290
- IO stream, *see* stream (输入输出流, 参见“流”)
- Iomanip header (iomanip头文件), 669
- iostate, 279
 - machine-dependent (机器相关的), 279
- iostream, 5
 - file marker (文件标记), 677
 - header (头文件), 6, 24, 278, 674
 - off_type, 677
 - pos_type, 677
 - random access (随机访问), 676
 - random IO program (随机输入输出程序), 676
 - seek and tell (seek和tell), 676–679
 - virtual base class (虚基类), 717
- iota, 780
- is-a relationship (是一种……关系), 564
- is_partitioned, 775
- is_permutation, 778
- is_sorted, 776
- is_sorted_until, 776
- isalnum, 82
- isalpha, 82
- isbn
 - Sales_data, 230
 - Sales_item, 20
- ISBN (书籍编号), 2
- isbn_mismatch, 694
- iscntrl, 82
- isdigit, 82
- isgraph, 82
- islower, 82
- isprint, 82
- ispunct, 82
- isShorter program (isShorter程序), 189
- isspace, 82
- istream, 5, 24, 279
 - see also* manipulator (参见“操纵符”)
 - >>(input operator) (输入运算符), 7
 - precedence and associativity (优先级和结合律), 138
 - as condition (作为条件), 13
 - chained input (链式输入), 7
 - condition state (条件状态), 279
 - conversion (类型转换), 144
 - explicit conversion to bool (显式转换为bool), 516
 - file marker (文件标记), 676
 - flushing input buffer (刷新输入缓冲区), 281
 - format state (格式化状态), 667
 - gcount, 675
 - get, 673
 - multi-byte version (多字节版本), 674
 - returns int (返回int), 674, 676
 - getline, 78, 288, 674
 - ignore, 675
 - no copy or assign (不能拷贝或赋值), 279
 - off_type, 677
 - peek, 673
 - pos_type, 677
 - put, 673
 - putback, 673
 - random access (随机访问), 676
 - random IO program (随机输入输出程序), 677
 - read, 675
 - seek and tell (seek和tell), 675–679
 - unformatted IO (未格式化的输入输出), 673
 - multi-byte (多字节), 675
 - single-byte (单字节), 673
 - unget, 673
- istream_iterator, 359, 371
 - >>(input operator) (输入运算符), 359
 - algorithms (算法), 360
 - initialization (初始化), 361
 - off-the-end iterator (尾后迭代器), 359
 - operations (操作), 360
 - type requirements (类型需求), 362
- istreamstring, 279, 287, 287–289
 - see also* istream (参见istream)
 - word per line processing (一行一词), 392
 - file marker (文件标记), 676
 - getline, 288
 - initialization (初始化), 287
 - off_type, 677
 - phone number program (电话号码程序), 288
 - pos_type, 677
 - random access (随机访问), 676
 - random IO program (随机输入输出程序), 677
 - seek and tell (seek和tell), 675–679
 - TextQuery constructor (TextQuery构造函数), 433
- isupper, 82
- isxdigit, 82
- iter_swap, 774

iterator (迭代器), 95, 95–100, 117

++ (increment) (递增), 96, 118

-- (decrement) (递减), 96

* (dereference) (解引用), 96

+= (compound assignment) (复合赋值), 99

+ (addition) (加法), 99

- (subtraction) (减法), 99

== (equality) (相等), 95, 96

!= (inequality) (不相等), 95, 96

algorithm type independence (算法类型独立), 337

arithmetic (算术), 99, 117

compared to reverse iterator (对比反向迭代器), 364

destination (目标), 368

insert (插入), 358, 371

move (移动), 358, 372, 480

uninitialized_copy, 480

off-the-beginning (首前位置)

before_begin, 313

forward_list, 313

off-the-end (尾后位置), 95, 118, 333

istream_iterator, 359

parameter (形参), 194

regex (正则表达式), 650

relational operators (关系运算符), 99

reverse (反向), 358, 363–364, 372

stream (流), 357, 359–362, 372

used as destination (作为目的地址), 341

iterator

compared to reverse_iterator (对比 reverse_iterator), 364

container (容器), 97, 297

header (头文件), 106, 341, 357

set iterators are const (集合迭代器是常量), 382

iterator category (迭代器类别), 365, 365–367, 372

bidirectional iterator (双向迭代器), 367, 371

forward iterator (前向迭代器), 366, 371

input iterator (输入迭代器), 366, 371

output iterator (输出迭代器), 366, 372

random-access iterator (随机访问迭代器), 367, 372

iterator range (迭代器范围), 296, 296–297, 333

algorithms (算法), 336

as initializer of container (作为容器的初始值), 300

container erase member (容器erase成员), 312

container insert member (容器insert成员), 307

left-inclusive (左闭合), 296

off-the-end (尾后位置), 296

K

key concept (关键概念)

algorithms (算法)

and containers (和容器), 337

iterator arguments (迭代器实参), 340

class user (类用户), 229

classes define behavior (类定义行为), 18

defining an assignment operator (定义赋值运算符), 453

dynamic binding in C++ (C++的动态绑定), 537

elements are copies (元素是拷贝), 306

encapsulation (封装), 242

headers for template code (模板代码的头文件), 582

indentation (缩进), 16

inheritance and conversions (继承与类型转换), 537

is A and has A relationships (是一个……关系和包含一个……关系), 564

name lookup and inheritance (名字查找与继承), 549

protected members (受保护的成员), 544

refactoring (重构), 542

respecting base class interface (关于基类接口), 532

specialization declarations (特例化声明), 626

type checking (类型检查), 42

types define behavior (类型定义行为), 3

use concise expressions (使用简洁的表达式), 132

key_type

associative container (关联容器), 381, 397

requirements (需求)

ordered container (有序容器), 378

unordered container (无序容器), 395

keyword table (关键字表), 43

Koenig lookup (Koenig查找), 706

L

L'c' (wchar_t literal) (wchar_t字面值常量), 35

label (标签)

case, 161, 178

statement (语句), 172

labeled statement (带标签语句), 172, 179

lambda expression (lambda表达式), 346, 371

arguments (实参), 347

biggies program (biggies程序), 348

reference capture (引用捕获), 350

capture list (捕获列表), 346, 371

capture by reference (引用捕获), 350

capture by value (值捕获), 347, 350

- implicit capture (隐式捕获), 351
- inferred return type (推断返回类型), 347, 353
- mutable, 352
- parameters (形参), 347
- passed to `find_if` (传给 `find_if`), 348
- passed to `stable_sort` (传给 `stable_sort`), 347
- synthesized class type (合成的类类型), 508–509
- trailing return type (尾置返回类型), 353
- left, manipulator (操纵符), 670
- left-inclusive interval (左闭合区间), 296, 333
- length_error, 176
- less<T>, 510
- less_equal<T>, 510
- lettergrade, program (字母型成绩程序), 157
- lexicographical_compare, 780
- library function objects (标准库函数对象), 509
 - as arguments to algorithms (作为算法的实参), 510
- library names to header table (头文件表的库名字), 766
- library type (标准库类型), 5, 23, 74
- lifetime (生命周期), 184, 226
 - compared to scope (对比作用域), 184
 - dynamically allocated objects (动态分配对象), 400, 409
 - global variable (全局变量), 184
 - local variable (局部变量), 184
 - parameter (形参), 185
- linkage directive (链接指示), 758, 762
 - C++ to C (由C++向C), 760
 - compound (复合), 759
 - overloaded function (重载函数), 761
 - parameter or return type (形参或返回类型), 760
 - pointer to function (函数指针), 759
 - return type (返回类型), 760
 - single (单独的), 759
- linker (链接), 187, 225
 - template errors at link time (链接时模板错误), 582
- list, 333
 - see also container (参见“容器”)
 - see also sequential container (参见“顺序容器”)
 - bidirectional iterator (双向迭代器), 366
 - header (头文件), 294
 - initialization (初始化), 299–301
 - list initialization (列表初始化), 300
 - merge, 369
 - overview (概览), 294
 - remove, 369
 - remove_if, 369
 - reverse, 369
 - splice, 370
 - unique, 369
 - value initialization (值初始化), 300
- list initialization (列表初始化), 39, 70
 - = (assignment) (赋值), 129
 - array, 301
 - associative container (关联容器), 377
 - container (容器), 300
 - dynamically allocated, object (动态分配对象), 407
 - pair, 380, 384, 467
 - preferred (首选的), 89
 - prevents narrowing (阻止缩减), 39
 - return value (返回值), 203, 380, 467
 - sequential container (顺序容器), 300
 - vector, 88
- literal (字面值常量), 35, 35–37, 70
 - bool, 37
 - in condition (在条件中), 127
 - char, 36
 - decimal (十进制), 35
 - double (*numEnum* or *numenum*), 36
 - float (*numF* or *numf*), 37
 - floating-point (浮点), 35
 - hexadecimal (*0xnum* or *0xnum*) (十六进制), 35
 - int, 35
 - long (*numL* or *numl*), 35
 - long double (*ddd.dddL* or *ddd.dddl*), 37
 - long long (*numLL* or *numll*), 35
 - octal (*0num*) (八进制), 35
 - string (字符串), 6, 24, 36
 - unsigned (*numU* or *numu*), 37
 - wchar_t, 37
- literal type (字面值类型), 59
 - class type (类类型), 267
- local class (局部类), 754, 762
 - access control (访问控制), 755
 - name lookup (名字查找), 755
 - nested class in (嵌套类), 755
 - restrictions (约束), 754
- local scope, see block scope (局部作用域, 参见“块作用域”)
- local static object (局部静态对象), 185, 226
- local variable (局部变量), 184, 226
 - destroyed during exception handling (异常处理时销毁), 415, 685
 - destructor (析构函数), 445
 - lifetime (生命周期), 184
 - pointer, return value (指针, 返回值), 201
 - reference, return value (引用, 返回值), 201
 - return statement (return语句), 200
- lock, weak_ptr, 420
- logic_error, 176
- logical operators (逻辑运算符), 123, 126

- condition (条件), 123
- function object (函数对象), 509
- logical_and<T>, 510
- logical_not<T>, 510
- logical_or<T>, 510
- long, 30
 - literal (*numL* or *numl*) (字面值), 35
- long double, 30
 - literal (*ddd.dddL* or *ddd.dddl*) (字面值), 37
- long long, 30
 - literal (*numLL* or *numll*) (字面值), 35
- lookup, name, *see* name lookup (名字查找)
- low-level const (底层const), 57, 70
 - argument and parameter (实参和形参), 191
 - conversion from (转换自), 145
 - conversion to (转换为), 144
 - overloaded function (重载函数), 208
 - template argument deduction (模板实参推断), 612
- low-order bits (低位), 641, 680
- lower_bound
 - algorithm (算法), 773
 - ordered container (有序容器), 389
- lround, 664
- lvalue (左值), 121, 149
 - cast to rvalue reference (转换为右值引用), 612
 - copy initialization, uses copy constructor (拷贝初始化, 使用拷贝构造函数), 477
 - decltype, 121
 - reference collapsing rule (引用折叠准则), 609
 - result (结果)
 - >(arrow operator) (箭头运算符), 133
 - ++ (increment) prefix (前置递增), 133
 - (decrement) prefix (前置递减), 133
 - * (dereference) (解引用), 120
 - [](subscript) (下标), 120
 - = (assignment) (赋值), 129
 - , (comma operator) (逗号运算符), 140
 - ?: (conditional operator) (条件运算符), 134
 - cast (强制类型转换) 144
 - decltype, 63
 - function reference return type (函数引用返回类型), 203
 - variable (变量), 472
- lvalue reference, *see also* reference (左值引用, 参见“引用”), 471, 486
 - collapsing rule (折叠规则), 609
 - compared to rvalue reference (对比右值引用), 472
 - function matching (函数匹配), 477
 - initialization (初始化), 472
 - member function (成员函数), 484
 - overloaded (重载), 484
 - move, 472

- template argument deduction (模板实参推断), 608

M

- machine-dependent (机器相关)
 - bit-field layout (位域布局), 756
 - char representation (表示形式), 32
 - end-of-file character (文件结束符), 13
 - enum representation (表示形式), 739
 - iostate, 281
 - linkage directive language (链接指示语言), 760
 - nonzero return from main (main函数返回非0值), 203
 - random IO (随机输入输出), 676
 - reinterpret_cast, 145
 - return from exception what (exception what返回), 177
 - signed out-of-range value (越界值), 33
 - signed types and bitwise operators (带符号的类型和位运算符), 136
 - size of arithmetic types (算术类型的大小), 30
 - terminate function (terminate函数), 175
 - type_info members (type_info成员), 735
 - vector, memory management (内存管理), 317
 - volatile implementation (可变的实现), 670
- main, 2, 24
 - not recursive (不允许递归), 204
 - parameters (形参), 196
 - return type (返回类型), 2
 - return value (返回值), 2-4, 203
- make_move_iterator, 480
- make_pair, 381
- make_plural program (make_plural程序), 201
- make_shared, 401
- make_tuple, 637
- malloc library function (标准库函数), 728, 763
- manipulator (操纵符), 6, 24, 666, 681
 - boolalpha, 667
 - change format state (改变格式化状态), 667
 - dec, 667
 - defaultfloat, 670
 - endl, 282
 - ends, 283
 - fixed, 670
 - flush, 283
 - hex, 667
 - hexfloat, 670
 - internal, 671
 - left, 671
 - noboolalpha, 667
 - noshowbase, 668
 - noshowpoint, 671

- noskipws, 672
- nouppercase, 668
- oct, 667
- right, 671
- scientific, 670
- setfill, 671
- setprecision, 669
- setw, 671
- showbase, 668
- showpoint, 671
- skipws, 672
- unitbuf, 283
- uppercase, 668
- map, 374, 397
 - see also* ordered container (参见“有序容器”)
 - * (derefence) (解引用), 382
 - [](subscript) (下标), 387, 398
 - adds element (添加元素), 388
 - at, 387
 - definition (定义), 376
 - header (头文件), 374
 - insert, 383
 - key_type requirements (key-type要求), 378
 - list initialization (列表初始化), 377
 - lower_bound, 390
 - map, initialization (初始化), 377
 - TextQuery class (TextQuery类), 431
 - upper_bound, 390
 - word_count program(word_count程序), 375
- mapped_type, associative container (关联容器), 381, 397
- match (匹配)
 - best (最佳), 225
 - no (不), 226
- match_flag_type, regex_constants, 658
- max, 779
- max_element, 779
- mem_fn, 746, 763
 - generates callable (生成可调用对象), 746
- member, *see* class data member (成员, 参见“类数据成员”)
- member access operators (成员访问运算符), 133
- member function (成员函数), 20, 24, 274
 - as friend (作为友元), 252
 - base member hidden by derived (派生类隐藏的基类成员), 549
 - class template (类模板)
 - defined outside class body (定义在类外部的), 585
 - instantiation (实例化), 587
 - const, 231, 273
 - () (call operator) (调用运算符), 508
 - reference return (引用返回), 247
 - declared but not defined (声明但未定义), 451
 - defined outside class (定义在类外部的), 232
 - definition (定义), 229–233
 - :: (scope operator) (作用域运算符), 232
 - name lookup (名字查找), 254
 - parameter list (形参列表), 253
 - return type (返回类型), 254
 - explicitly inline (显式内联), 244
 - function matching (函数匹配), 245
 - implicit this parameter (隐式this形参), 231
 - implicitly inline (隐式内联), 231
 - inline and header (内联和头文件), 244
 - move-enabled (可移动的), 482
 - name lookup (名字查找), 257
 - overloaded (重载), 245
 - on const (在const上), 247
 - on lvalue or rvalue reference(左值或右值引用), 484
 - overloaded operator (重载运算符), 443, 490
 - reference qualified (引用限定符), 483, 487
 - returning *this (返回*this), 233, 246
 - rvalue reference parameters (右值引用形参), 427
 - scope (作用域), 253
 - template, *see* member template (模板, 参见“成员模板”)
- member template (成员模板), 595, 630
 - Blob, iterator constructor (迭代器构造函数), 596
 - DebugDelete, 596
 - declaration (声明), 596
 - defined outside class body (定义在类外部的), 597
 - instantiation (初始化), 597
 - template parameters (模板参数), 596, 597
- memberwise (逐个成员)
 - copy assignment (拷贝赋值), 443
 - copy constructor (拷贝构造函数), 440
 - copy control (拷贝控制), 239, 486
 - destruction is implicit (析构是隐式的), 446
 - move assignment (移动赋值), 476
 - move constructor (移动构造函数), 476
- memory (内存)
 - see also* dynamically allocated (参见“动态分配”)
 - exhaustion (耗尽), 408
 - leak (泄漏), 410
- memory header (memory头文件), 400, 401, 427, 429
- merge, 774
 - list and forward_list (list和forward_list), 369
- Message, 460–464
 - add_to_Folder, 462
 - class definition (类定义), 461
 - copy assignment (拷贝赋值), 463

- copy constructor (拷贝构造函数), 462
- design (设计), 460
- destructor (析构函数), 462
- move assignment (移动赋值), 479
- move constructor (移动构造函数), 479
- move_Folders, 479
- remove_from_Folders, 463
- method, *see* member function (方法, 参见“成员函数”)
- Microsoft compiler (微软编译器), 4
- min, 779
- min_element, 779
- minmax, 779
- minus<T>, 510
- mismatch, 772
- mode, file (文件模式), 290
- modulus<T>, 510
- move, **469, 472, 774**
 - argument-dependent lookup (实参相关的查找), 706
 - binds rvalue reference to lvalue (将右值引用绑定到左值), 471
 - explained (解释), 610–612
 - inherently dangerous (固有的危险), 481
 - Message, move operations (移动操作), 478
 - moved from object has unspecified value (不能对移后源对象的值做任何假设), 472
 - reference collapsing rule (引用折叠准则), 611
 - StrVec reallocate, 469
 - remove_reference, 611
- move assignment (移动赋值), **474, 487**
 - copy and swap (拷贝和交换), 478
 - derived class (派生类), 555
 - HasPtr, valuelike (类值), 478
 - memberwise (逐个成员), 476
 - Message, 479
 - moved-from object destructible (源对象在移动后应该是可析构的), 475
 - noexcept, 473
 - rule of three/five, virtual destructor exception (三/五法则, 虚析构函数异常), 552
 - self-assignment (自赋值), 475
 - StrVec, 474
 - synthesized (合成的)
 - deleted function (删除的函数), 476, 553
 - derived class (派生类), 552
 - multiple inheritance (多重继承), 712
 - sometimes omitted (有时被忽略), 476
- move constructor (移动构造函数), **469, 473, 473–474, 487**
 - and copy initialization (和拷贝初始化), 478
 - derived class (派生类), 555
 - HasPtr, valuelike (类值), 478
 - memberwise (逐个成员), 476
 - Message, 479
 - moved-from object destructible (源对象在移动后应该是可析构的), 473, 475
 - noexcept, 473
 - rule of three/five, virtual destructor exception (三/五法则, 虚析构函数异常), 552
 - string, 468
 - StrVec, 473
 - synthesized (合成的)
 - deleted function (删除的函数), 553
 - derived class (派生类), 552
 - multiple inheritance (多重继承), 712
 - sometimes omitted (有时被忽略), 476
- move iterator (移动迭代器), 358, 372, **480, 487**
 - make_move_iterator, 480
 - StrVec, reallocate, 480
 - uninitialized_copy, 480
- move operations (移动操作), 471–485
 - function matching (函数匹配), 477
 - move, 472
 - noexcept, 473
 - rvalue references (右值引用), 471
 - valid but unspecified (有效但未指明的), 475
- move_backward, 775
- move_Folders, Message, 479
- multidimensional array (多维数组), 112–116
 - [](subscript) (下标), 113
 - argument and parameter (实参和形参), 196
 - begin, 115
 - conversion to pointer (转换为指针), 114
 - definition (定义), 112
 - end, 115
 - initialization (初始化), 113
 - pointer (指针), 114
 - range for statement and (范围for语句和), 114
- multimap, 397
 - see also* ordered container (参见“有序容器”)
 - * (dereference) (解引用), 382
 - definition (定义), 376
 - has no subscript operator (不含下标运算符), 387
 - insert, 383, 386
 - key_type requirements (需求), 378
 - list initialization (列表初始化), 377
 - lower_bound, 390
 - map, initialization (初始化), 377
 - upper_bound, 390
- multiple inheritance (多重继承), **710, 723**
 - see also* virtual base class (参见“虚基类”)
 - = (assignment) (赋值), 712
 - ambiguous conversion (二义性转换), 713
 - ambiguous names (二义性名字), 715

- avoiding ambiguities (避免二义性), 716
- class derivation list (类派生列表), 711
- conversion (类型转换), 712
- copy control (拷贝控制), 712
- name lookup (名字查找), 715
- object composition (对象组合), 711
- order of initialization (初始化顺序), 711
- scope (作用域), 715
- virtual function (虚函数), 714

multiplies<T>, 510

multiset, 397

- see also* ordered container (参见“有序容器”)
- insert, 386
- iterator, 382
- key_type requirements (key-type要求), 378
- list initialization (列表初始化), 377
- lower_bound, 390
- override comparison (覆盖比较)
 - Basket class (Basket类), 559
 - using compareIsbn (使用compareIsbn), 379
- upper_bound, 390
- used in Basket (在Basket中使用), 560

mutable

- data member (数据成员), 245
- lambda expression (lambda表达式), 352

N

\n (newline character) (换行符), 36

name lookup (名字查找), 254, 274

- :: (scope operator), overrides (作用域运算符, 覆盖), 256

- argument-dependent lookup (实参相关的查找), 706

- before type checking (类型检查之前), 549
 - multiple inheritance (多重继承), 716

- block scope (块作用域), 43

- class (类), 254

- class member (类成员)
 - declaration (声明), 254
 - definition (定义), 255, 257
 - function (函数), 254

- depends on static type (由静态类型决定), 547, 549
 - multiple inheritance (多重继承), 713

- derived class (派生类), 547

- name collisions (名字冲突), 548

- local class (局部类), 754

- multiple inheritance (多重继承), 715
 - ambiguous names (二义性名字), 715

- namespace (命名空间), 705

- nested class (嵌套类), 748

- overloaded virtual functions (重载虚函数), 551

- templates (模板), 582

- type checking (类型检查), 210

- virtual base class (虚基类), 718

named cast (命名的强制类型转换), 144

- const_cast, 144, 144

- dynamic_cast, 144, 730

- reinterpret_cast, 145, 145

- static_cast, 145, 145

namespace (命名空间), 7, 24, 695, 723

- alias (别名), 702, 723

- argument-dependent lookup (实参相关的查找), 706

- candidate function (候选函数), 708

- cplusplus_primer, 697

- definition (定义), 695

- design (设计), 696

- discontiguous definition (不连续的定义), 696

- friend declaration scope (友元声明作用域), 707

- function matching (函数匹配), 708

- global (全局的), 698, 723

- inline (内联), 699, 723

- member (成员), 696

- member definition (成员定义), 698

- outside namespace (命名空间之外), 698

- name lookup (名字查找), 705

- nested (嵌套的), 698

- overloaded function (重载函数), 708

- placeholders, 355

- scope (作用域), 695–700

- std, 7

- template specialization (模板特例化), 626, 698

- unnamed (未命名的), 700, 724

- local to file (文件局部), 700

- replace file static (替换文件中的静态声明), 620

namespace pollution (命名空间污染), 695, 723

narrowing conversion (缩减的类型转换), 39

NDEBUG, 216

negate<T>, 510

nested class (嵌套类), 746, 763

- access control (访问控制), 747

- class defined outside enclosing class (定义在外层类之外的类), 748

- constructor, QueryResult (构造函数), 748

- in local class (在局部类中), 756

- member defined outside class body (定义在类外的成员), 748

- name lookup (名字查找), 748

- QueryResult, 747

- relationship to enclosing class (与外层类的关系),

- 747, 749
- scope (作用域), 747
- static member (静态成员), 748
- nested namespace (嵌套的命名空间), 698
- nested type, *see* nested class (嵌套类型, 参见“嵌套类”)
- new, 407, 407–408, 436
 - execution flow (执行流程), 726
 - failure (失败), 408
 - header (头文件), 176, 409, 424, 727
 - initialization (初始化), 407
 - placement (定位), 409, 436, 729, 763
 - union with class type member (含有类类型成员的union), 753
 - shared_ptr, 412
 - unique_ptr, 417
 - with auto (和auto), 408
- new[], 423, 423–424
 - initialization (初始化), 423
 - returns pointer to an element (返回指向元素的指针), 423
 - value initialization (值初始化), 424
- newline (\n), character (换行符), 36
- next_permutation, 778
- no match (没有匹配的函数), 209, 226
 - see also* function matching (参见“函数匹配”)
- noboolalpha, manipulator (操纵符), 667
- NoDefault, 262
- noexcept
 - exception specification (异常说明), 690, 723
 - argument (实参), 690–692
 - violation (违反), 690
 - move operations (移动操作), 473
 - operator (运算符), 691, 723
- nonconst reference, *see* reference (非常量引用, 参见“引用”)
- none, bitset, 643
- none_of, 771
- nonportable (不可移植), 33, 763
- nonprintable character (不可打印的字符), 36, 70
- nonthrowing function (不抛出异常的函数), 690, 723
- nontype parameter (非类型参数), 580, 630
 - compare, 580
 - must be constant expression (必须是常量表达式), 581
 - type requirements (类型需求), 580
- normal_distribution, 664
- noshowbase, manipulator (操纵符), 668
- noshowpoint, manipulator (操纵符), 671
- noskipws, manipulator (操纵符), 672
- not_equal_to<T>, 510
- NotQuery, 564
 - class definition (类定义), 568

- eval function (eval函数), 573
- nouppercase, manipulator (操纵符), 668
- nth_element, 776
- NULL, 48
- null (\0), character (空字符), 36
- null pointer (空指针), 48, 70
 - delete of, 409
- null statement (空语句), 154, 179
- null-terminated character string, *see* C-style string (未终止的字符串, 参见“C风格字符串”)
- nullptr, 48, 70
- numeric header (numeric头文件), 336, 779
- numeric conversion, to and from string (数值类型转换为string以及string转换为数值类型), 327
- numeric literal (数字字面值常量)
 - float (numF or numf), 37
 - long (numL or numl), 37
 - long double (ddd.dddl or ddd.dddl), 37
 - long long (numLL or numll), 37
 - unsigned (numU or numu), 37

O

- object (对象), 39, 70
 - automatic (自动的), 185, 225
 - dynamically allocated (动态分配), 407–412
 - const object (常量对象), 409
 - delete, 409
 - factory program (factory程序), 409
 - initialization (初始化), 408
 - lifetime (生命周期), 400
 - new, 407
 - lifetime (生命周期), 184, 226
 - local static (局部静态), 185, 226
 - order of destruction (析构顺序)
 - class type object (类类型对象), 445
 - derived class object (派生类对象), 556
 - multiple inheritance (多重继承), 712
 - virtual base classes (虚基类), 720
 - order of initialization (初始化顺序)
 - class type object (类类型对象), 259
 - derived class object (派生类对象), 531, 552
 - multiple inheritance (多重继承), 712
 - virtual base classes (虚基类), 720
- object code (对象代码), 226
- object file (对象文件), 187, 226
- object-oriented programming (面向对象程序设计), 576
- oct, manipulator (操纵符), 667
- octal, literal (0num) (八进制字面值常量), 35
- octal escape sequence (\nnn) (八进制转义序列), 36
- off-the-beginning iterator (首前迭代器), 313, 333
 - before_begin, 313

- forward_list, 313
- off-the-end (尾后)
 - iterator (迭代器), 95, 118, 333
 - iterator range (迭代器范围), 296
 - pointer (指针), 105
- ofstream, 279, 283–287, 290
 - see also ostream (参见ostream)
 - close, 284
 - file marker (文件标记), 676
 - file mode (文件模式), 286
 - initialization (初始化), 284
 - off_type, 677
 - open, 284
 - pos_type, 677
 - random access (随机访问), 676
 - random IO program (随机输入输出程序), 677
 - seek and tell (seek和tell), 675–679
- old-style, cast (旧式强制类型转换), 146
- open, file stream (文件流), 284
- operand (运算对象), 120, 150
 - conversion (类型转换), 141
- operator (运算符), 120, 150
- operator alternative name (运算符可选名字), 42
- operator delete
 - class member (类成员), 728
 - global function (全局函数), 726, 763
- operator delete[]
 - class member (类成员), 728
 - compared to deallocate (对比deallocate), 728
 - global function (全局函数), 726
- operator new
 - class member (类成员), 728
 - global function (全局函数), 726, 763
- operator new[]
 - class member (类成员), 727
 - compared to allocate (对比allocate), 728
 - global function (全局函数), 726
- operator overloading, see overloaded operator (运算符重载, 参见“重载运算符”)
- operators (运算符)
 - arithmetic (算术), 124
 - assignment (赋值), 11, 129–131
 - binary (二元), 120, 149
 - bitwise (位), 135–139
 - bitset, 643
 - comma (,) (逗号), 140
 - compound assignment (复合赋值), 11
 - conditional (?:) (条件), 134
 - decrement (递减), 131–133
 - equality (相等), 16, 125
 - increment (递增), 11, 131–133
 - input (输入), 7
 - iterator (迭代器)
 - addition and subtraction (加法和减法), 99
 - arrow (箭头), 98
 - dereference (解引用), 96
 - equality (相等), 95, 97
 - increment and decrement (递增和递减), 96
 - relational (关系), 99
 - logical (逻辑), 125
 - member access (成员访问), 133
 - noexcept, 691
 - output (输出), 6
 - overloaded, arithmetic (重载的, 算术), 497
 - pointer (指针)
 - addition and subtraction (加法和减法), 106
 - equality (相等), 96
 - increment and decrement (递增和递减), 105
 - relational (关系), 107, 110
 - subscript (下标), 108
 - relational (关系), 11, 125, 128
 - Sales_data
 - += (compound assignment) (复合赋值), 443
 - + (addition) (加法), 497
 - == (equality) (相等), 498
 - != (inequality) (不相等), 498
 - >> (input operator) (输入运算符), 495
 - << (output operator) (输出运算符), 494
 - Sales_item, 17
 - scope (作用域), 74
 - sizeof, 139
 - sizeof..., 619
 - string
 - addition (加法), 80
 - equality and relational (相等性和关系), 80
 - IO (输入输出), 77
 - subscript (下标), 84–86
 - subscript (下标), 103
 - typeid, 732, 763
 - unary (一元), 120, 150
 - vector
 - equality and relational (相等性和关系), 92
 - subscript (下标), 92–94
- options to main (main选项), 196
- order of destruction (析构顺序)
 - class type object (类类型对象), 445
 - derived class object (派生类对象), 556
 - multiple inheritance (多重继承), 712
 - virtual base classes (虚基类), 721
- order of evaluation (求值顺序), 120, 150
 - && (logical AND) (逻辑与), 123
 - || (logical OR) (逻辑或), 123
 - , (comma operator) (逗号运算符), 123

- ? : (conditional operator) (条件运算符), 123
- expression (表达式), 123
- pitfalls (误区), 132
- order of initialization (初始化顺序)
 - class type object (类类型对象), 259
 - derived class object (派生类对象), 531
 - multiple base classes (多重基类), 723
 - multiple inheritance (多重继承), 712
 - virtual base classes (虚基类), 720
- ordered container (有序容器)
 - see also* container (参见“容器”)
 - see also* associative container (参见“关联容器”)
 - key_type requirements (需求), 378
 - lower_bound, 390
 - override default comparison (覆盖默认比较操作), 378
 - upper_bound, 390
- ordering, strict weak (严格弱序), 378, 398
- OrQuery, 564
 - class definition (类定义), 570
 - eval function (eval函数), 571
- ostream, 5, 24, 279
 - see also* manipulator (参见“操作符”)
 - << (output operator) (输出运算符), 6
 - precedence and associativity (优先级和结合律), 138
 - chained output (链式输出), 6
 - condition state (条件状态), 280
 - explicit conversion to bool (显式转换为 bool), 516
 - file marker (文件标记), 676
 - floating-point notation (浮点数符号), 670
 - flushing output buffer (刷新输出缓冲), 282
 - format state (格式化状态), 666
 - no copy or assign (不允许拷贝或赋值), 279
 - not flushed if program crashes (如果程序崩溃则不刷新), 283
 - off_type, 677
 - output format, floating-point (输出格式, 浮点), 668
 - pos_type, 677
 - precision member (precision成员), 669
 - random access (随机访问), 676
 - random IO program (随机输入输出程序), 677
 - seek and tell (seek和tell), 676–679
 - tie member (tie成员), 283
 - virtual base class (虚基类), 717
 - write, 676
- ostream_iterator, 359, 372
 - << (output operator) (输出运算符), 361
 - algorithms (算法), 360
 - initialization (初始化), 361
 - operations (操作), 361
 - type requirements (类型需求), 362
- ostreamstream, 279, 287, 287–289
 - see also* ostream (参见ostream)
 - file marker (文件标记), 676
 - initialization (初始化), 287
 - off_type, 677
 - phone number program (电话号码程序), 289
 - pos_type, 677
 - random access (随机访问), 676
 - random IO program (随机输入输出程序), 677
 - seek and tell, 676–679
 - str, 289
- out (file mode) (文件模式), 286
- out-of-range value (越界值), signed, 33
- out_of_range, 176
 - at function (at函数), 310
- out_of_stock, 694
- outer scope (外层作用域), 44, 70
- output, standard (标准输出), 5
- output iterator (输出迭代器), 366, 372
- overflow (溢出), 125
- overflow_error, 176
- overhead, function call (函数调用开销), 213
- overload resolution, *see* function matching (重载解析, 参见“函数匹配”)
- overloaded function (重载函数), 206, 206–210, 226
 - see also* function matching (参见“函数匹配”)
 - as friend (作为友元), 252
 - compared to redeclaration (对比重新声明), 207
 - compared to template specialization (对比模板特例化), 625
 - const parameters (常量形参), 208
 - constructor (构造函数), 235
 - function template (函数模板), 614–619
 - linkage directive (链接指示), 761
 - member function (成员函数), 245
 - const, 247
 - move-enabled (可移动的), 482
 - reference qualified (引用限定), 484
 - virtual (虚), 551
 - move-enabled (可移动的), 482
 - namespace (命名空间), 708
 - pointer to (指向), 221
 - scope (作用域), 210
 - derived hides base (派生类隐藏基类), 549
 - using declaration (using声明), 708
 - in derived class (在派生类中), 551
 - using directive (using指示), 709
- overloaded operator (重载运算符), 120, 150, 443, 487, 490, 523
 - ++ (increment) (递增), 502–504

-- (decrement) (递减), 502–504

* (dereference) (解引用), 504

 StrBlobPtr, 504

& (address-of) (取地址), 491

-> (arrow operator) (箭头运算符), 504

 StrBlobPtr, 504

[] (subscript) (下标), 501

 StrVec, 501

() (call operator) (调用运算符), 506

 absInt, 506

 PrintString, 507

= (assignment) (赋值), 443, 499

 StrVec initializer_list, 499

+= (compound assignment) (复合赋值), 493, 497

 Sales_data, 443

+ (addition) (加法), Sales_data, 497

== (equality) (相等), 497

 Sales_data, 497

!= (inequality) (不相等), 498

 Sales_data, 497

< (less-than), strict weak ordering (小于, 严格弱序), 498

>> (input operator) (输入运算符), 495–496

 Sales_data, 495

<< (output operator) (输出运算符), 494–495

 Sales_data, 494

&& (logical AND) (逻辑与), 491

|| (logical OR) (逻辑或), 491

& (bitwise AND) (位与), Query, 570

| (bitwise OR) (位或), Query, 571

~ (bitwise NOT) (位取反), Query, 569

, (comma operator) (逗号运算符), 491

ambiguous (二义性), 521

arithmetic operators (算术运算符), 497

associativity (结合律), 490

binary operators (二元运算符), 490

candidate function (候选函数), 521

consistency between relational and equality operators (关系运算符与相等性运算符的一致性), 498

definition (定义), 443, 490

design (设计), 491–493

equality operators (相等性运算符), 497

explicit call to (显式调用), 491

 postfix operators (后置运算符), 503

function matching (函数匹配), 520–522

member function (成员函数), 443, 490

member vs. nonmember function (成员与非成员函数), 490, 492

precedence (优先级), 490

relational operators (关系运算符), 498

 requires class-type parameter (需要类类型形参), 490

 short-circuit evaluation lost (丢失短路求值功能), 491

 unary operators (一元运算符), 490

override, virtual function (覆盖, 虚函数), 528, 576

 override specifier (override说明符), 527, 530, 538

P

pair, 379, 398

 default initialization (默认初始化), 380

 definition (定义), 379

 initialization (初始化), 379

 list initialization (列表初始化), 380, 384, 467

 make_pair, 381

 map, * (dereference) (解引用运算符), 382

 operations (操作), 380

 public data members (公有数据成员), 380

 return value (返回值), 467

Panda, 710

parameter (形参), 182, 187, 226

 array (数组), 193–197

 buffer overflow (缓冲区溢出), 193

 to pointer conversion (转换为指针), 193

 C-style string (C风格字符串), 194

 const, 190

 copy constructor (拷贝构造函数), 440

 ellipsis (省略符), 199

 forwarding (转发), 612

 function pointer, linkage directive (函数指针, 链接指示), 759

 implicit this (隐式this), 231

 initialization (初始化), 183, 187

 iterator (迭代器), 193

 lifetime (生命周期), 184

 low-level const (底层const), 191

 main function (main函数), 196

 multidimensional array (多维数组), 195

 nonreference (非引用), 188

 uses copy constructor (使用拷贝构造函数), 441

 uses move constructor (使用移动构造函数), 476

 pass by reference (传引用), 188, 226

 pass by value (传值), 189, 226

 passing (参数传递), 187–191

 pointer (指针参数), 189, 193

 pointer to const (const的指针), 220

 pointer to array (数组指针), 195

 pointer to function (函数指针), 223

- linkage directive (链接指示), 759
- reference (引用参数), 188–192
 - to const (转换为const), 191, 220
 - to array (转换为数组), 195
- reference to const (const的引用), 190
- template, *see* template parameter (模板, 参见“模板参数”)
- top-level const (顶层const), 190
- parameter list (参数列表)
 - function (函数), 2, 24, **182**
 - template (模板), 578, 631
- parameter pack (参数包), 631
 - expansion (扩展), **621**, 621–623, 631
 - function template (函数模板), 630
 - sizeof..., 619
 - variadic template (可变参数模板), 618
- parentheses, override precedence (括号, 覆盖优先级), 122
- partial_sort, 776
- partial_sort_copy, 776
- partial_sum, 780
- partition, 775
- partition_copy, 775
- partition_point, 775
- pass by reference (传引用), **187**, 188, 226
- pass by value (传值), **189**, 226
 - uses copy constructor (使用拷贝构造函数), 441
 - uses move constructor (使用移动构造函数), 476
- pattern (模式), **621**, 631
 - function parameter pack (函数参数包), 622
 - regular expression, phone number (正则表达式, 电话号码), 654
 - template parameter pack (模板参数包), 621
- peek, istream, 673
- PersonInfo, 288
- phone number, regular expression (电话号码, 正则表达式)
 - program (程序), 654
 - reformat program (重排格式程序), 657
 - valid, 655
- pitfalls (误区)
 - dynamic memory (动态内存), 410
 - order of evaluation (求值顺序), 133
 - self-assignment (自赋值), 454
 - smart pointer (智能指针), 417
- using directive (using指示), 704
- placeholders, 355
- placement new (定位new), 409, 436, **729**, 763
 - union, class type member (union, 类类型成员), 752
- plus<T>, 510
- pointer (指针), **47**, 47–48, 70
 - ++ (increment) (递增运算符), 131
 - (decrement) (递减运算符), 131
 - * (dereference) (解引用运算符), 48
 - [] (subscript) (下标运算符), 108
 - = (assignment) (赋值运算符), 49
 - + (addition) (加法运算符), 106
 - (subtraction) (减法运算符), 106
 - == (equality) (相等运算符), 50, 109
 - != (inequality) (不等运算符), 50, 106
 - and array (和数组), 105
 - arithmetic (算术运算), **106**, 118
 - const, **56**, 69
 - const pointer to const (const的const指针), 56
 - constexpr, 59
 - conversion (类型转换)
 - from array (从数组转换), 143
 - to bool (转换为bool), 144
 - to const (转换为const), 56, 144
 - to void* (转换为void*), 143
 - dangling (空悬指针), **411**, 436
 - declaration style (声明风格), 51
 - definition (定义), 47
 - delete, 409
 - derived-to-base conversion (派生类到基类的转换), 530
 - under multiple inheritance (多重继承下的转换), 712
 - dynamic_cast, 730
 - implicit this (隐式this), **231**, 274
 - initialization (初始化), 47–49
 - invalid (无效指针), 47
 - multidimensional array (多维数组), 114
 - null (空指针), **48**, 70
 - off-the-end (尾后指针), **105**
 - parameter (形参), 189, 192
 - relational operators (关系运算符), 109
 - return type (返回类型), 184
 - return value, local variable (返回值, 局部变量), 201
 - smart (智能指针), **400**, 436
 - to const (const的指针), **56**
 - and typedef (和类型别名), 60
 - to array (数组的指针)
 - parameter (形参), 196
 - return type (返回类型), 184
 - return type declaration (返回类型声明), 205
 - to const (const的指针), 69
 - overloaded parameter (重载参数), 208, 220
 - to pointer (指针的指针), 52
 - typeid operator (typeid运算符), 733
 - valid (有效指针), 48

- volatile, 757
- pointer to function (函数指针), 221–223
 - auto, 223
 - callable object (可调用对象), 346
 - decltype, 222
 - exception specification (异常说明), 690, 692
 - explicit template argument (显式模板实参), 607
 - function template instantiation (函数模板实例化), 607
 - linkage directive (链接指示), 759
 - overloaded function (重载函数), 222
 - parameter (形参), 222
 - return type (返回类型), 184, 222
 - using decltype (使用decltype), 223
 - template argument deduction (模板实参推断), 607
 - trailing return type (尾置返回类型), 223
 - type alias (类型别名), 222
 - typedef, 222
- pointer to member (成员指针), 739, 763
 - arrow (→*) (箭头运算符), 740
 - definition (定义), 740
 - dot (.) (点运算符), 740
 - function (函数), 741
 - and bind (和bind), 746
 - and function (和function), 746
 - and mem_fn (和mem_fn), 746
 - not callable object (不是可调用对象), 745
 - function call (函数调用), 742
 - function table (函数表), 743
 - precedence (优先级), 742
- polymorphism (多态), 537, 576
- pop
 - priority_queue, 330
 - queue, 330
 - stack, 330
- pop_back
 - sequential container (顺序容器), 311
 - StrBlob, 406
- pop_front, sequential container (顺序容器的 pop_front), 311
- portable (可移植), 755
- precedence (优先级), 120, 121–123, 150
 - = (assignment) (赋值运算符), 130
 - ?: (conditional operator) (条件运算符), 134
 - assignment and relational operators (赋值和关系运算符), 130
 - dot and dereference (点和解引用运算符), 133
 - increment and dereference (递增和解引用运算符), 132
 - of IO operator (IO运算符的优先级), 138
 - overloaded operator (重载运算符), 491
 - parentheses overrides (括号覆盖), 122
 - pointer to member and call operator (成员指针和调用运算符), 741
- precedence table (优先级表), 147
- precision member, ostream (ostream的 precision成员), 669
- predicate (谓词), 344, 372
 - binary (二元), 344, 371
 - unary (一元), 344, 372
- prefix, smatch, 652
- preprocessor (预处理器), 68, 70
 - #include, 6
 - assert macro (assert宏), 215, 225
 - header guard (头文件保护符), 68
 - variable (变量), 49, 71
- prev_permutation, 778
- print, Sales_data, 234
- print program (print程序)
 - array parameter (数组参数), 193
 - array reference parameter (数组引用参数), 195
 - pointer and size parameters (指针和大小参数), 195
 - pointer parameter (指针参数), 194
 - two pointer parameters (两个指针参数), 194
 - variadic template (可变参数模板), 620
- print_total
 - explained (解释), 536
 - program (程序), 527
- PrintString, 507
 - () (call operator) (调用运算符), 506
- priority_queue, 330, 333
 - emplace, 330
 - empty, 330
 - equality and relational operators (相等和关系运算符), 329
 - initialization (初始化), 329
 - pop, 330
 - push, 330
 - sequential container (顺序容器), 330
 - size, 330
 - swap, 330
 - top, 330
- private
 - access specifier (访问说明符), 240, 273
 - copy constructor and assignment (拷贝构造函数和赋值运算符), 451
 - inheritance (继承), 543, 576
- program (程序)
 - addition (加法程序)
 - Sales_data, 66
 - Sales_item, 18, 20
 - alternative_sum, 604
 - biggies, 348

- binops desk calculator (binops桌面计算器), 511
- book from author version 1 (查找作者书籍程序版本1), 389
- book from author version 2 (查找作者书籍程序版本2), 390
- book from author version 3 (查找作者书籍程序版本3), 391
- bookstore (书店程序)
 - Sales_data, 229
 - Sales_data using algorithms (使用算法), 362
 - Sales_item, 21
- buildMap, 392
- children's story (儿童故事程序), 342–349
- compare, 578
- count_calls, 185
- debug_rep
 - additional nontemplate versions (另一个非模板版本), 617
 - general template version (通用模板版本), 615
 - nontemplate version (非模板版本), 617
 - pointer template version (指针模板版本), 616
- elimDups, 343–346
- error_msg, 198
- fact, 182
- factorial, 204
- factory
 - new, 409
 - shared_ptr, 402
- file extension (文件扩展名), 647
 - version 2 (版本2), 654
- find last word (查找最后一个单词的程序), 364
- find_char, 189
- findBook, 639
- flip, 614
- flip1, 612
- flip2, 613
- grade clusters (成绩分类程序), 92
- grading (成绩统计程序)
 - bitset, 644
 - bitwise operators (位运算), 137
- i before e (查找i在e之前的文本的程序), 646
 - version 2 (版本2), 651
- isShorter, 189
- letter grade (字母成绩统计程序), 157
- make_plural, 201
- message handling (消息处理), 460
- phone number (电话号码程序)
 - istringstream, 287
 - ostringstream, 289
 - reformat (重排格式), 658
 - regular expression version (正则表达式版本), 654
 - valid, 655
- print
 - array parameter (数组参数), 193
 - array reference parameter (数组引用参数), 195
 - pointer and size parameters (指针和大小参数), 195
 - pointer parameter (指针参数), 194
 - two pointer parameters (两个指针参数), 194
 - variadic template (可变参数模板), 620
- print_total, 527
- Query, 563
 - class design (类定义), 563–566
- random IO (随机IO程序), 677
- reset
 - pointer parameters (指针参数), 188
 - reference parameters (引用参数), 189
- restricted word_count (限制的word_count程序), 375
- sum, 604
- swap, 200
- TextQuery, 431
 - design (设计), 430
- transform, 393
- valid, 655
- vector capacity (vector容量程序), 318
- vowel counting (元音计数程序), 160
- word_count
 - map, 375
 - unordered_map, 394
- word_transform, 392
- ZooAnimal, 710
- promotion, *see* integral promotion (提升, 参见“整形提升”)
- protected
 - access specifier (访问说明符), 529, 542, 575
 - inheritance (继承), 543, 576
 - member (成员), 542
- ptr_fun deprecated (ptr_fun已弃用), 357
- ptrdiff_t, 107, 118
- public
 - access specifier (访问说明符), 240, 273
 - inheritance (继承), 543, 576
- pure virtual function (纯虚函数), 540, 576
 - Disc_quote, 540
 - Query_base, 564
- push
 - priority_queue, 330
 - queue, 330
 - stack, 330